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Sierra Nevada Forest Plan Amendment

Final Supplemental Environmental Impact Statement



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Sierra Nevada Forest Plan Amendment

Final Supplemental Environmental Impact Statement

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August 2013

Abstract

This 2013 final supplemental environmental impact statement (SEIS) to the 2004 Sierra Nevada Forest Plan Amendment (SNFPA or Framework) Final SEIS was prepared to comply with a court order issued by the Eastern District Court of California to remedy a violation of NEPA relative to the analysis of alternatives presented in the 2004 SNFPA Final SEIS by completing a narrowly focused SEIS. Although the Draft SEIS was issued in February 2010, owing to delays caused by further judicial proceedings, issuance of this Final SEIS was not completed until August 2013. This Final SEIS updates vegetation and fire modeling for the seven non-selected alternatives (F2 through F8) that were carried forward from the 2001 SNFPA final environmental impact statement (FEIS) so they could be evenly compared with the two alternatives (S1 and S2) that were developed in the 2004 SNFPA Final SEIS. In addition, alternatives F2 through F8 are assessed with regard to reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events.

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Summary

The Pacific Southwest and Intermountain Regions of the USDA Forest Service propose to supplement the 2004 SEIS for the Sierra Nevada Forest Plan Amendment. The area affected by the proposal includes the 11 Sierra Nevada national forests (the Modoc, Lassen, Plumas, Tahoe, Eldorado, Stanislaus, Sierra, Sequoia, Inyo National Forests; the portion of the Humboldt-Toiyabe National Forest that is in the Sierra Nevada, and the Lake Tahoe Basin Management Unit).

This action is necessary to respond to the Eastern District of California's April 15, 2013 remedy ruling, which ordered the Forest Service to prepare a supplemental EIS by August 30, 2013 that addresses the 2004 Framework SEIS's NEPA violation.¹ In describing the NEPA violation to be remedied by this SEIS, the District Court characterized the Forest Service's error as one related to the analysis and comparison of alternatives in the 2001 and 2004 EISs. In order to remedy the NEPA violation, the District Court issued the following order: "The Court orders the Forest Service to complete a supplemental EIS that addresses the range of alternatives deficiency identified by the Court in its summary judgment opinion. ... The final supplemental EIS should be issued by August 30, 2013."

Because the purpose of this supplemental EIS is limited to court-specified analysis of alternatives described in the 2001 FEIS and 2004 SEIS, the proposed action remains the same as that described in the 2004 SEIS: Alternative S2. Sierra Nevada National Forests are currently managed in accordance with Alternative S2, which was the selected alternative in the 2004 SNFPA ROD.

Based upon the specific analysis included in this supplemental EIS, the responsible official will decide whether to continue management of Sierra Nevada National Forests under existing direction (Alternative S2) or whether the Forests would be better managed under a different alternative.

¹ Sierra Forest Legacy v. Sherman, 2:05-CV00205-MCE-GGH, 2013 WL 1627894 (E.D. Cal. Apr. 15, 2013).

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Chapter 1. Purpose and Need

1.1. Introduction

The process for this supplemental environmental impact statement (SEIS)² to the 2004 Sierra Nevada Forest Plan Amendment (SNFPA or Framework) Final SEIS was initiated to comply with a November 4, 2009 remedy order issued by the United States District Court for the Eastern District of California.³ That order required the preparation of an SEIS by May 1, 2010 in order to remedy the District Court's August 8, 2008 finding that the 2004 Framework SEIS's analysis of alternatives was inadequate.⁴ In its August 2008 ruling, the District Court stated: "because the Forest Service altered its modeling techniques between the issuance of the 2001 FEIS and the 2004 SEIS but failed to update its analysis of the 2001 FEIS alternatives to reflect these new techniques, changed circumstances [are] present that render[] improper any reliance by the 2004 Framework on its 2001 predecessor."

The District Court's August 2008 ruling was based on a May 15, 2008 ruling by the Ninth Circuit Court of Appeals, which concluded that 2004 Framework's SEIS failed to adequately address the change in modeling between the 2001 and 2004 Frameworks.⁵ That May 2008 ruling was revised in an August 13, 2009 ruling, in which the Ninth Circuit held that the 2004 Framework SEIS "failed to account for its changed modeling techniques in the alternatives it considered" and "introduced substantively new objectives from those contained within the 2001 FEIS."⁶ These "new objectives" included "reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events." While the District Court's November 2009 remedy order requiring the preparation of a Supplemental EIS did not specifically address the "new objectives" addressed by the Ninth Circuit, the 2010 Draft SEIS addressed both the modeling issue and the "new objectives" issue.

After the Draft SEIS was issued in February 2010, the plaintiffs in the Sierra Forest Legacy litigation appealed the District Court's August 2008 decision on the merits and its November

² In this document, the following terminology is used:

SNFPA = Sierra Nevada Forest Plan Amendment (also known as Sierra Nevada Framework or Framework)

2001 FEIS = 2001 SNFPA Final Environmental Impact Statement

2004 SEIS = 2004 SNFPA Final Supplemental Environmental Impact Statement

2010 Draft SEIS = February 2010 SNFPA Draft Supplemental Environmental Impact Statement

2013 Final SEIS = August 2013 SNFPA Final Supplemental Environmental Impact Statement

³ Sierra Forest Legacy v. Rey, 670 F. Supp. 2d 1106 (E.D. Cal. 2009) vacated and remanded sub nom. Sierra Forest Legacy v. Sherman, 646 F.3d 1161 (9th Cir. 2011).

⁴ Sierra Nevada Forest Prot. Campaign v. Rey, 573 F. Supp. 2d 1316, 1348 (E.D. Cal. 2008) aff'd in part, rev'd in part and remanded sub nom. Sierra Forest Legacy v. Sherman, 646 F.3d 1161 (9th Cir. 2011).

⁵ Sierra Forest Legacy v. Rey, 526 F.3d 1228, 1230 (9th Cir. 2008) opinion withdrawn and superseded on reh'g, 577 F.3d 1015 (9th Cir. 2009).

⁶ Sierra Forest Legacy v. Rey, 577 F.3d 1015 (9th Cir. 2009).

2009 remedy order to the Ninth Circuit. As a result, the District Court stayed the requirement that the SEIS be completed by May 1, 2010, while the appeals proceeded.

On May 26, 2011, the Ninth Circuit reversed the District Court's November 2009 remedy order and remanded the case to the District Court for further proceedings. Because the District Court's November 2009 remedy ruling was the original impetus for this SEIS, work on the SEIS remained on hold after the Ninth Circuit's 2011 ruling.

On April 15, 2013, the District Court issued a new remedy ruling, ordering the Forest Service to prepare a supplemental EIS by August 30, 2013 to address the 2004 Framework SEIS's NEPA violation.⁷ In describing the NEPA violation to be remedied by this SEIS, the District Court characterized the Forest Service's error as one related to the analysis and comparison of alternatives in the 2001 and 2004 EISs. In order to remedy the NEPA violation, the District Court issued the following order: "The Court orders the Forest Service to complete a supplemental EIS that addresses the range of alternatives deficiency identified by the Court in its summary judgment opinion. ... The final supplemental EIS should be issued by August 30, 2013."

The current SEIS has been drafted to comply with the District Court's April 15, 2013 order. While that order did not include any references to the "new objectives" raised in the Ninth Circuit's August 2009 ruling, those objectives were discussed in the 2010 Draft SEIS and the discussions have been carried forward and clarified in this Final SEIS. Therefore, this Final SEIS, like the Draft SEIS issued in February 2010, addresses the two concerns raised by the District Court and Ninth Circuit in the various rulings over the last several years: the change in modeling methods between the 2001 FEIS and the 2004 SEIS and consideration of "new objectives" by the 2004 Framework.

1.2. Background

The 2001 FEIS and 2004 SEIS and their associated Records of Decision (ROD) were the result of more than a decade of regional planning efforts aimed at managing species and ecosystems of the Sierra Nevada bioregion. This planning effort specifically addressed management on the 11 Sierra Nevada national forests (the Modoc, Lassen, Plumas, Tahoe, Eldorado, Stanislaus, Sierra, Sequoia, Inyo National Forests; the portion of the Humboldt-Toiyabe National Forest that is in the Sierra Nevada, and the Lake Tahoe Basin Management Unit) in terms of five problem areas:⁸

- old forest ecosystems and associated species;
- aquatic, riparian, and meadow ecosystems and associated species;
- fire and fuels;
- noxious weeds; and

⁷ Sierra Forest Legacy v. Sherman, 2:05-CV00205-MCE-GGH, 2013 WL 1627894 (E.D. Cal. Apr. 15, 2013).

⁸ 2001 FEIS, Ch1 pp. 4-7 and 2004 SEIS, Ch1, pp. 26 through 29.

- lower westside hardwood forest ecosystems.

The 2004 SEIS and ROD made refinements to the 2001 SNFPA ROD based on direction from the Chief of the Forest Service in his resolution of appeals for the 2001 SNFPA ROD. The 2004 SEIS specifically proposed refinements of management direction related to conserving old forest ecosystems and associated species; conserving aquatic, riparian, and meadow ecosystems, and managing fire and fuels as well as refinement of management direction so as to more fully implement the *Herger-Feinstein Quincy Library Group Forest Recovery Act*.

The Record of Decision for the 2004 SEIS, adopting Alternative S2, was signed on January 21, 2004. As described above, the District Court's order requires preparation of this SEIS and set the scope of the analysis conducted for this document.

1.3. Changes from Draft to Final

The formatting of this SEIS was updated between the draft and final version to more closely mirror CEQ's formatting requirements for an EIS (40 CFR 1502). No changes were made in the modeling between the 2010 Draft SEIS and this Final SEIS. The majority of the content was simply reorganized with some additional clarifications and strengthened explanations of consequences as identified by the interdisciplinary team while considering and responding to the public comments. A brief summary of the major changes is provided below:

- Updated the discussion of the legal history related to the Final SEIS;
- Clarified the purpose and need to address the underlying purpose and need in which the agency is responding (40 CFR 1502.13);
- Framed the proposed action to better meet the intent of the current SEIS;
- Briefly discussed alternatives brought forward from the 2001 FEIS and the 2004 SEIS;
- Added a summary of the alternatives;
- Moved content from Chapter 2 to Chapter 4 to mirror the format presented in 36 CFR 1502;
- Designed Chapter 3, which discusses the affected environment, to accurately reflect the needs of the current SEIS, and moved content that had previously been in Chapter 3 to Chapter 4 of the Final SEIS.

1.4. Purpose and Need for Action

Because this supplement is limited to addressing the NEPA violation outlined in the April 15, 2013 District Court remedy ruling, the underlying need for action remains the same as was described in the 2001 FEIS and 2004 SEIS. The purpose of this supplement is to provide an objective comparison of all of the alternatives (Alternatives S1, S2 and F2 through F8) by updating the SPECTRUM modeling for Alternatives F2 through F8 to allow a direct comparison with Alternatives S1 and S2. Even though not required in the April 15, 2013 District Court

remedy ruling, as discussed in Section 1.1., this supplement also assesses the alternatives in terms of the objectives discussed by the Ninth Circuit⁹ of reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events.

1.5. Proposed Action

Because the purpose of this SEIS is limited to court-specified analysis and comparison of alternatives described in the 2001 FEIS and 2004 SEIS, the proposed action remains the same as that described in the 2004 SEIS: Alternative S2. Sierra Nevada National Forests are currently managed in accordance with Alternative S2 which was the selected alternative in the 2004 SNFPA ROD.

1.6. Responsible Officials and Decision to be Made

The Regional Foresters for the Pacific Southwest Region and the Intermountain Region are the responsible officials for this supplement of the SNFPA. The responsible officials will review any new information derived from the updated environmental analysis herein, and decide whether to continue management of Sierra Nevada National Forests under existing direction (Alternative S2) or whether the Forests would be better managed under a different alternative.

1.7. Public Participation

Scoping

Extensive public involvement was conducted during development of the 2001 FEIS (Volume 1, Chapter 1, pp. 9 through 11) and 2004 SEIS (Volume 1, Chapter 1, pp. 30 through 32) for the Sierra Nevada Forest Plan Amendment. The order issued by the District Court identifies the scope of this SEIS. In accordance with 40 CFR 1502.9(c)(4), no additional scoping is required for preparation of a supplemental EIS.

Public Comment

The Draft SEIS was released for a 45-day public comment period, beginning on February 19, 2010. On March 19, 2010, the comment period was extended for an additional 30 days through May 5, 2010. Responses included 37 form letters as well as specific comments from 2 government agencies (See Appendix B), 4 organizations and 5 individuals. Comments were grouped into five topics including: range of alternatives, effects analysis, alternative preferences, forest plan revision, and extension of comment period. Appendix A includes a summary of comments received and the agency response to those comments.

⁹ Sierra Forest Legacy v. Rey, 577 F.3d 1015 (9th Cir. 2009).

Chapter 2. Alternatives, including the Proposed Action

2.1. Introduction

This chapter describes and compares the alternatives considered for the 2004 SEIS. Alternatives considered in detail and alternatives eliminated from detailed study are described in this chapter. Section 2.4 presents the alternatives in tabular format so they can be compared with regard to the updated modeling along with updates to the environmental consequences. In addition, the alternatives are compared relative to the three objectives.

2.2. Alternatives Considered in Detail

Because this supplement is limited to addressing the District Court's remedy ruling, the alternatives considered are unchanged from those considered in the 2004 SEIS. Nine alternatives are considered in detail: the no action alternative (Alternative S1), the proposed action (Alternative S2), and seven non-selected action alternatives from the 2001 FEIS (Alternatives F2-F8). The alternatives are briefly described here. For a detailed description of Alternatives S1 and S2, refer to the alternative descriptions in the 2004 SEIS Volume 1, Chapter 2, pages 45 through 88. For alternatives F2 through F8, refer to 2004 SEIS, Volume 1, Chapter 2, pages 88 through 90 and 2001 FEIS, Volume 1, Chapter 2, pages 83 through 164.

Alternative S1: Theme - Continue management in existing national forest land and resource management plans as amended by the SNFPA Record of Decision (ROD 2001); manage sensitive wildlife cautiously

This alternative reflects concerns that impacts from mechanical fuel treatments pose greater risks to habitats, particularly in the short-term, than risks posed by wildfires. Alternative S1 involves a cautious approach for conducting activities in habitats for sensitive species, particularly species associated with old forest ecosystems. Under this alternative, the 11 Sierra forests would be managed under management direction in the Records of Decision for existing land and resource management plans, as amended by the 2001 SNFPA ROD.

Alternative S2: Theme - Proposed Action, the Selected Alternative

Under the proposed action (Alternative S2), Forest Service managers would use thinning, salvage, and prescribed and natural fires to make forests less susceptible to the effects of uncharacteristically severe wildfires, as well as invasive pests and diseases. Goals established in the 2001 SNFPA ROD for conservation of old forest ecosystems and associated species would be retained. However, this alternative also provides for other important elements of old forest

ecosystems, including the objectives of reducing stand density and regenerating shade intolerant species. The 11 Sierra forests would be managed under management direction in the Records of Decision for existing land and resource management plans, as amended by the 2004 SNFPA ROD. Since this alternative has been in effect for nearly 10 years, its selection would continue existing management and, at this time, would be the equivalent of a no action alternative.

Alternative F2: Theme - Establish large reserves where management activities are very limited

Alternative F2 establishes large reserves, where human management is very limited, to maintain and perpetuate old forest, aquatic, riparian, meadow, and hardwood ecosystems. Alternative F2 was created to address views that only minimal human-caused disturbances should be allowed in ecosystems and that “natural” conditions are desired.

Alternative F3: Theme - Actively manage to restore ecosystems. Use local analysis and collaboration

Alternative F3 emphasizes restoration of desired ecosystem conditions and ecological processes through active management determined through landscape analysis, monitoring, and local collaboration. Management activities would promote ecosystem conditions and ecological processes expected within natural ranges of variability under prevailing climates.

Alternative F4: Theme - Develop ecosystems that are resilient to large-scale, severe disturbances

Alternative F4 emphasizes the development of forest ecosystem conditions that anticipate and are resilient to large-scale, severe disturbances common to the Sierra Nevada, such as drought and high intensity wildfire. The alternative is consistent with the view that ecosystems should be actively managed to meet ecological goals and socioeconomic expectations. Alternative F4 would have the greatest number of acres available for active management including timber harvest.

Alternative F5: Theme - Preserve existing undisturbed areas and restore others to achieve ecological goals. Limit impacts from active management through range-wide management standards and guidelines

Alternative F5 preserves existing undisturbed areas and restores others to achieve ecological goals. Alternative F5 emphasizes reintroducing fire as a natural process and using fire to reduce fire and fuel accumulations.

Unroaded areas larger than 5,000 acres, ecologically significant unroaded areas between 1,000 and 5,000 acres, and inner zones of riparian areas would be preserved and left to develop under natural processes. Other areas, including old forest emphasis areas and general forest, would be

restored under a limited active management approach to increase the amount of, and enhance processes associated with, old forest conditions. Alternative 5 limits impacts from management activities by specifying range-wide management standards and guidelines.

Alternative F6: Theme - Integrate desired conditions for old forest and hardwood ecosystems with fire and fuels management goals. Reintroduce fire into Sierra Nevada forest ecosystems

Alternative F6 integrates desired conditions for old forest and hardwood conservation with fire and fuels management. This alternative provides direction for implementing a landscape-scale strategic fuels treatment program in high-risk vegetation types across Sierra Nevada landscapes to: (a) reduce the potential for large severe wildfires, and (b) increase and perpetuate old forest and hardwood ecosystems, providing for the viability of species associated with these ecosystems.

Alternative F6 emphasizes re-introducing fire into Sierra Nevada ecosystems, particularly old forest ecosystems. It uses active management to protect and restore desired ecosystem conditions. Prescribed fire is emphasized in old forest emphasis areas, while a mix of prescribed fire and mechanical treatments may be used in general forest areas to move toward and maintain desired conditions.

Alternative F7: Theme - Actively manage entire landscapes to establish and maintain a mosaic of forest conditions approximating patterns expected under natural conditions.

Alternative F7 aims to establish and maintain a diversity of forest ages and structures over the landscape in a mosaic approximating patterns that would be expected under natural conditions; that is conditions characterized by current and expected future climates, biota, and natural processes. Ecosystems and ecological processes would be actively managed to maintain and restore them to desired conditions. Silvicultural treatments could produce timber and other forest products.

Alternative F8: Theme - Manage sensitive wildlife habitat cautiously. Develop new information to reduce uncertainty about the effects of management on sensitive species.

Alternative F8 emphasizes a cautious approach to treating fuels in sensitive wildlife habitat. New information from research and administrative studies would be developed to reduce uncertainty about the effects of management on sensitive species. Until further guidelines were developed, treatments in suitable California spotted owl habitat would retain specific levels of large trees, canopy cover, canopy layers, snags, and down woody material.

2.3. Alternatives Not Considered In Detail

No additional alternatives were considered with this supplement. In the 2004 SEIS (Volume 1, pp. 91 through 93), six additional alternatives were considered, but eliminated from detailed study. Alternatives were considered that would stage implementation of the Proposed Action for the first five years; would set a smaller diameter limit on tree removal; would apply the standards and guidelines of the proposed action to the Herger-Feinstein Quincy Library Group Act Pilot Project Area; would limit group selection in the Pilot Project Area to the area planned for the administrative study; would apply the standards and guidelines in the proposed action only to the urban-wildland interface; would include forest products as a primary management objective; and would make minor changes to individual standards and guidelines. Alternatives were eliminated because they did not respond to the purpose and need for action, new information, and/or implementation concerns. Some of these alternatives were also embedded in the Alternatives considered in detail.

2.4. Comparison of Alternatives S1, S2, and F2 through F8

This section summarizes the analysis presented in Chapter 4 - Environmental Consequences of this Final SEIS. Table 2.4.1. below summarizes the outcome of updated SPECTRUM modeling runs on the resources analyzed and summarized in the 2004 SEIS (Volume 1, pp. 94 through 106). Following the table is a brief summary of the results of assessing the alternatives with regard to (1) reducing stand density for forest health, (2) restoring and maintaining ecosystem structure and composition, and (3) restoring ecosystems after severe wildfires and other large catastrophic disturbance events. Chapter 4 includes the full analysis and rationale for the summary findings presented below.

2.4.1. Effects of Updated Modeling

Table 2.4.1. Summary of Effects of Updated Modeling for Alternatives F2 to F8 by Resource Topic

Resource Topic	Effects of Updated Modeling of Alternatives F2-F8
Old Forest Ecosystems	The change in the updated table does not change the discussion of the effects of the alternatives on the amount and distribution of old forest conditions presented in the 2004 SEIS (Volume 1, pp. 94 through 95)
Potential Losses to Severe Wildfires	The updated modeling results do not change the conclusion reached in the 2004 SEIS: "Alternative F4 has the greatest reduction in wildfire acreage expected to burn annually, followed in order by Alternatives F3, F6, F7, and S2" (Volume 1, p. 96).
Old Forest Ecosystem Functions and Processes	The updated modeling does not affect the comparison of Alternatives S1, S2 and F2 through F8 in terms of their effects on old forest ecosystem functions and processes presented in the 2001 SEIS (Volume 1, p. 96).
Aquatic, Riparian, and Meadow Ecosystems	The updated modeling does not affect the comparison of Alternatives S1, S2 and F2 through F8 in terms of their effects on aquatic, riparian, and meadow ecosystems presented in the 2004 SEIS (Volume 1, pp. 96 through 97).
Fire and Fuels	The updated values do not change the discussion of the effects of the alternatives on fire and fuels management presented in the 2004 SEIS (Volume 1, pp. 97 through 98).
Old Forest Associated Species	Updated CWHR acreages do not change the discussion of the effects of the alternatives on the California spotted owl, northern goshawk, marten, fisher, Sierra Nevada red fox, and wolverine presented in the 2004 SEIS (Volume 1, pp. 98 through 101).

Resource Topic	Effects of Updated Modeling of Alternatives F2-F8
Aquatic, Riparian, and Meadow Associated Species	This section of the 2004 SEIS presents a qualitative comparison of the alternatives, based on the degree of protection for known species sites as well as aquatic, riparian, and meadow ecosystems in general provided by each alternative's management standards and guidelines. These sections of the 2004 SEIS remain unchanged by the updated modeling effort.
Economy	The updated modeling results do show changes from the 2004 SEIS values (brought forward from the 2001 FEIS) for "estimated average annual jobs" and "estimated total annual earnings" for Alternatives F2 through F8. However, the relative differences and rankings between the effects of the alternatives in terms of jobs and earnings related to commercial timber harvest on national forest lands remain similar to those presented in the 2004 SEIS.
Commercial Forest Products	While the updated values for commercial biomass output for Alternatives F2 through F8 are generally higher than the values presented in the 2004 SEIS (with the exception of Alternatives F4 and F6, which declined slightly), the updated values do not alter the relationship between the alternatives in terms of projected commercial biomass output from the Sierra Nevada national forests in the first decade.
Grazing	The updated SPECTRUM modeling does not affect this analysis process; hence, the grazing effects comparison of Alternatives S1, S2, and F2 through F8 presented in the 2004 SEIS (Volume 1, pp. 104 through 105) remains unchanged.
Roads	Analysis of the effects of the alternatives on national forest roads is a qualitative assessment based on the degree of active management under the alternatives. The updated SPECTRUM modeling does not affect this assessment; hence, the effects of Alternatives S1, S2, and F2 through F8 on roads presented in the 2004 SEIS (Volume 1, p. 105) remains unchanged.
Air Quality	The updated modeling effort for Alternatives F2 through F8 resulted in nominal changes in the values for particulate matter emissions. The updated values do not change the discussion of the effects of the alternatives on air quality presented in the 2004 SEIS (Volume 1, pp. 106).
Recreation	Effects on recreation are assessed in qualitative terms based on each alternative's management theme and emphasis. The updated SPECTRUM modeling does not affect this assessment; hence, the effects of Alternatives S1, S2, and F2 through F8 on recreation presented in the 2004 SEIS (Volume 1, p. 106) remains unchanged.

2.4.2. Summary of How Alternatives Meet Forest Health and Ecosystem Restoration Objectives

2.4.2.1. Reducing Stand Density for Forest Health

Table 2.4.2.1. Comparison of Extent of Mechanical Fuels Treatments among the Alternatives.

	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Annual acreage of mechanical fuels treatment (gross treatment acres)¹⁰	51,345	72,200	8,099	25,084	84,273	10,509	31,388	67,112	15,801

The alternatives were evaluated based on (1) the amount of projected mechanical thinning acres; and (2) the degree to which the alternative's standard and guidelines allow managers to sufficiently reduce stand density to address local forest health problems. The alternatives that provide for the greatest opportunity to reduce stand densities to address forest health are

¹⁰ In the original Table 2.5.3a in the 2004 SEIS (Volume 1, p. 98), there was an incorrect footnote to the column for Alternative S1 that read "acres based on gross treatment acres." This footnote applied to all alternatives and should have been attributed to the entire row.

Alternatives F4, F7, and S2, which project the use of mechanical treatment on the most acres. These alternatives allow the flexibility needed to remove larger trees, including medium sized trees between 20" to 30" in diameter, when necessary to reduce stand density and reduce stand risk from attack by bark beetles. These alternatives also allow projects to be designed to implement the amount of forest thinning required to reduce competition between trees for limited site resources, increasing the remaining trees' resistance to mortality from drought and insect attacks. Alternatives with the least opportunity to reduce stand density to address forest health are Alternatives F2, F5, F8, and S1, which project fewer acres of mechanical treatment. While these alternatives may allow for treatments that would reduce wildfire hazards, the restrictions on areas that can be treated and the limit on the size of trees that can be removed limit their ability to reduce competition between trees, which in turn limits their ability to improve forest health. Although the projected acreage of treatments appears to place Alternative S1 higher in the ranking, its restrictive standards and guidelines for mechanical thinning treatments mean that treatments would not sufficiently reduce stand densities to respond to forest health issues.

2.4.2.2. Restoring and Maintaining Ecosystem Structure and Composition

Table 2.4.2.2. Comparison of Management Emphasis, Extent of Mechanical and Prescribed Fire Fuels Treatments, and Percent Change in Annual Wildfire Acreage among the Alternatives (2013 SEIS Update).

	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Management Emphasis	protection, restoration	restoration, resiliency	protection	protection, restoration	resiliency	protection, restoration	restoration	restoration resiliency	protection, restoration
Annual acreage of mechanical fuels treatment (gross treatment acres)¹¹	51,345	72,200	8,099	25,084	84,273	10,509	31,388	67,112	15,801
Annual acreage of prescribed burns	49,560	42,020	20,486	63,483	50,987	45,591	73,250	45,487	61,176
Total acreage treated annually	100,905	114,220	28,585	88,567	135,260	56,100	104,638	112,599	76,977
Percent change in annual wildfire acreage from first to fifth decade	-2%	-18%	11%	-23%	-25%	3%	-22%	-19%	-7%

The alternatives were evaluated based on the degree of opportunity to restore and maintain ecosystem structure and composition considering: (1) the approach for achieving an ecosystem

¹¹ In the original Table 2.5.3a in the 2004 SEIS (Volume 1, p. 98), there was an incorrect footnote to the column for Alternative S1 that read "acres based on gross treatment acres." This footnote applied to all alternatives and should have been attributed to the entire row.

structure and composition goal as embodied in the management emphasis; (2) the acreage of projected treatments and expected changes in the amount of wildfire; and (3) the degree of opportunity for active management. Based on these factors, the alternatives that provide the greatest opportunity to restore and maintain ecosystem structure and composition are F4, F7, and S2 because they include a management emphasis of resiliency, they create the most opportunity to use mechanical treatments, and they generally have the greatest percent reduction in annual wildlife acreage. Alternatives with the fewest opportunities to reduce stand density to address forest health are Alternatives F2, F5, F8, and S1 based on their protection management emphasis and fewer acres are available for mechanical treatment. These alternatives also have the lowest change in annual wildfire acreage and some have a projected increase. Alternatives F3 and F6 are in-between these two groupings. They allow for a moderate degree of active management with a restoration management emphasis, and a moderate amount of mechanical treatments. However, alternatives F3 and F6 have a large reduction in percent annual wildfire acreage, largely due to high amounts of prescribed burning. Alternative S1 is grouped in the low category even though the mechanical treatment acreage is closer to the levels of F7 because, as described above, the limitations on the size of trees that can be removed limits its effectiveness to reduce stand density and manage residual stands for desired ecosystem structure and composition.

2.4.2.3. Restoring Ecosystems Following Large, Severe Disturbance Events.

Table 2.4.2.3. Comparison the Alternatives by Characteristics that Indicate the Degree to which Managers have Opportunities to Implement Restoration Actions Following Large, Severe Disturbance Events.

Characteristic	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Management Emphasis	protection, restoration	restoration, resiliency	protection	protection, restoration	resiliency	protection, restoration	restoration	restoration resiliency	protection, restoration
Degree of Active Management	moderate	moderate to high	low	moderate	high	low to moderate	moderate	moderate to high	moderate
Degree of Local Flexibility	low to moderate	moderate to high	low	moderate to high	high	low	moderate	moderate to high	low to moderate

In summary, Alternatives F4, F7, and S2 provide the greatest amount of opportunity to use management actions to restore ecosystems following severe wildfires or other large catastrophic disturbance events. Alternative S2 provides specific direction allowing management of ecosystems disturbed after severe wildfires and other large disturbances (2004 SNFPA ROD, pp. 52 through 53). Alternatives F2, F5, F8, and S1 provide the least amount of opportunity to use active management to restore ecosystems following large disturbance events. Alternative S1 specifically limits post-fire salvage across old forest emphasis areas (2001 SNFPA ROD, Appendix A, p. A42). Alternatives F3 and F6 fall in-between these two groupings in terms of providing opportunities for managers to actively restore ecosystems affected by large,

catastrophic disturbances. While the opportunities to take management action vary in each alternative, decisions to implement actions are made only after considering the site-specific and landscape context of the particular disturbance event, including the benefits and consequences of leaving disturbed areas untreated.

Chapter 3. Affected Environment

This SEIS formally tiers to the 2001 FEIS and the 2004 SEIS. This document uses the 2004 SEIS as its foundation.

Chapter 3 "Affected Environment" of the 2004 SEIS has been reviewed in light of the updated modeling results for Alternatives F2 through F8 as well as the need to assess Alternatives F2 through F8 in terms of objectives for reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events. Chapter 3 describes the existing condition, and neither the updated modeling results, nor the analysis of the three ecosystem management objectives create a need to change Chapter 3 of the 2004 SEIS.

Chapter 4. Environmental Consequences

Chapter 4 "Environmental Consequences" of the 2004 SEIS has been reviewed in light of the updated modeling results for Alternatives F2 through F8. As the magnitude of the changed values as a result of the updated modeling are not significantly different than those considered in the 2004 SEIS, there is not a need to substantively update or revise the effects analyses for Alternatives F2 through F8. Hence, the sections of the 2004 SEIS Chapter 4 that referenced specific effects analyses for Alternatives F2 through F8 contained in Chapter 3 of the 2001 FEIS remain unchanged except as provided herein.

Section 4.1. updates text and tables presented in the 2004 SEIS where updated SPECTRUM Modeling resulted in changes to information regarding Alternatives F2 through F8. Section 4.1. also discusses the implications of these changes on environmental consequences. Section 4.2. includes an analysis of the alternatives from the 2004 SEIS in terms of the three management objectives addressed in the Ninth Circuit's preliminary injunction ruling.¹²

4.1. Effects of Updated SPECTRUM Modeling

This section compares Alternatives S1, S2, and F2 through F8 by summarizing their environmental consequences, mirroring Section 2.5 of the 2004 SEIS (Volume 1, pp. 94 through 106). For each resource that summarized effects based on SPECTRUM modeling runs, two tables are displayed: (1) an exact duplicate of the table for Alternatives S1, S2, and F2 through F8 presented in the 2004 SEIS and (2) a new table displaying the results of the updated Gamma vegetation simulator and the SPECTRUM allocation model runs. The updated calculations are based on the baseline vegetation and land allocation data and analysis assumptions as described in Section 4.1.1 applied to the non-selected alternatives that were brought forward from the 2001 FEIS (Alternatives F2 through F8).

The "Comparison of Effects of the Alternatives" section presented in Chapter 2 of the 2004 SEIS (Volume 1, pp. 94 through 106) was carefully reviewed in light of the updated modeling results to assess whether, and to what extent, this updated information required changes in each resource's effects analysis. Hence, each set of tables is followed by a discussion that: (1) compares the updated modeling results to those presented in the 2004 SEIS; (2) evaluates the extent and magnitude to which these effects are different than those presented in Section 2.5 of the 2004 SEIS (Volume 1, pp. 94 through 106); and (3) if necessary, provides additional detailed evaluation of the effects of all of the alternatives (S1, S2, and F2 through F8) in light of the updated modeling results.

¹² Sierra Forest Legacy v. Rev., 526 F.3d 1228, 1230 (9th Cir. 2008) opinion withdrawn and superseded on reh'g, 577 F.3d 1015 (9th Cir. 2009).

4.1.1. SPECTRUM Modeling

Both the 2001 FEIS and 2004 SEIS used the same modeling tools and analysis methodologies to assess each alternative's outputs and environmental effects. However, as described below, some baseline vegetation and land allocation data, as well as some assumptions regarding the locations and effectiveness of fuels treatments, changed between the modeling conducted for the 2001 FEIS and the 2004 SEIS. The Gamma vegetation simulator and the SPECTRUM allocation model were the primary tools used in both the 2001 and 2004 SNFPA analyses.

The 2001 FEIS (Volume 4, Appendix B— Modeling, pp. B-23 through B-29) describes the Gamma vegetation simulator and SPECTRUM allocation models in detail. The 2004 SEIS also provides information about these models (Volume 1, Appendix B, pp. 396 through 397). As described in the 2004 SEIS (Volume 1, Appendix B, pp. 392 through 393, "B-1.2. Changes in Analysis, Assumptions, and Input Data), the vegetation and fire effects modeling for Alternatives S1 and S2 in the 2004 SEIS was slightly different than that of the modeling of Alternatives F2 through F8 in the 2001 FEIS. The modeling for the 2004 SEIS used updated baseline forest inventory, land allocation, and treatment data as well as different assumptions regarding the spatial pattern of strategically placed area treatments (SPLATS) and fire effects coefficients. In the analysis presented in this 2013 SEIS, the Gamma vegetation simulator and SPECTRUM allocation modeling has been updated for Alternatives F2 through F8 using the same data and assumptions that were used to model Alternatives S1 and S2 in the 2004 SEIS as follows:

- The three new forest inventories for the Eldorado, Tahoe, and Plumas National Forests that were used to model Alternatives S1 and S2 have been used to model Alternatives F2 through F8.
- By 2003, each Sierra Nevada national forest had updated its great gray owl, California spotted owl, and northern goshawk Protected Activity Center (PAC) maps. The 2003 updated and refined PAC boundaries (delineated in accordance with direction in the 2001 SNFPA ROD) on the 11 national forests, which were used to model Alternatives S1 and S2, have been used to model Alternatives F2 through F8.
- By 2003, each Sierra Nevada national forest had updated its Wildland Urban Intermix (WUI) maps, based on locally determined defense and threat zones. The 2003 updated and refined WUI boundaries (delineated in accordance with direction in the 2001 SNFPA ROD) on the 11 national forests, which were used to model Alternatives S1 and S2, have been used to model Alternatives F2 through F8.
- Analysis of Alternatives S1 and S2 accounted for defensible fuel profile zones (DFPZ) and group selection treatments completed as of 2003 within the Herger Feinstein Quincy Library Group (HFQLG) Pilot Project. Alternatives F2 through F8 have been modeled assuming the same set of treatments completed within the HFQLG Pilot Project Area as were assumed for modeling of Alternatives S1 and S2.
- Analysis of Alternatives S1 and S2 defined strategically placed area treatments (SPLATS) to resemble a herringbone (or tread) pattern, which more closely corresponded to the pattern

developed by Dr. Mark Finney as described in the 2001 FEIS (Volume 4, Appendix G, pp. G-30 through G-50). The Forest Service conducted a fire analysis for the Consumnes watershed of the Eldorado National Forest during 2002, and found that fuels treatment pattern modeled in the 2001 FEIS (the upper two-thirds of the slopes on south and west facing aspects) did not produce the desired fire behavior modification outcomes, resulting in the need for a more effective approach (2004 SEIS, Appendix B, p. 392). A more evenly distributed landscape pattern of area fuels treatment was found to be more efficient when modeled with FARSITE and FLAMMAP fire simulation models (*ibid.*). The 2001 alternatives that included management direction for implementing SPLAT treatments (Alternatives F3, F4, F6, F7, and F8) have been modeled in this SEIS assuming the same SPLAT treatment pattern used to model Alternatives S1 and S2 in the 2004 SEIS.

- Updated fire coefficients used to model the effectiveness of fuels treatments under Alternatives S1 and S2 (2004 SEIS, Volume 1, Appendix B, p. 392, "B-1.2. Changes in Analysis, Assumptions, and Input Data.") have been applied to model the effects of Alternatives F2 through F8 in this 2013 Final SEIS.
- The same 2003 costs and values derived from fuel treatments (specifically treatment costs and values derived from the sale of timber and biomass) used in the analysis of Alternatives S1 and S2 were used to model Alternatives F2 through F8.

4.1.2. Old Forest Ecosystems

As described in the 2004 SEIS (Volume 1, p. 94), Alternatives S1, S2, and F2 through F8 are compared in terms of their effects on: (1) amount and distribution of old forest conditions; (2) potential losses of old forests to wildfire; and (3) old forest ecosystem functions and processes.

Amount and Distribution of Old Forest Conditions

Table 2.5.1a (2004 SEIS, Volume 1, p. 95) displays three variables to compare the effects of the alternatives on the amount and distribution of old forest conditions: (1) upper diameter limit for tree removal; (2) percent change in the number of large trees by the second decade; and (3) acreage of old forest allocation. The SPECTRUM modeling results are used only for the "percent change in the number of large trees by the second decade" variable. The other two variables are not derived from SPECTRUM: the "upper diameter limit" for tree removal is defined by each alternative's standards and guidelines while the "acreage of old forest allocation" simply reports the acreage of the old forest emphasis area land allocation under each alternative. Both of these variables are a function of the alternative's design and neither is affected by the modeling update.

In carefully reviewing the values for "percent change in the number of large trees by the second decade" for Alternatives F2 through F8 in Table 2.5.1a of the 2004 SEIS (Volume 1, p. 95), the interdisciplinary team discovered a previously unreported error in the 2001 FEIS, which was inadvertently repeated in the 2004 SEIS. Apparently, the 2001 FEIS displayed values for "percent change in the number of large trees" for Alternatives F2 through F8 (2001 FEIS,

Volume 1, Chapter 2, p. 201, Table titled "Old Forest Conservation") that were an exact duplication of the values displayed in the 2000 SNFPA Draft EIS (2000 SNFPA Draft EIS, Volume 1, Chapter 2, p. 2-177, Table titled "Old Forest Conservation"). However, these values should have changed due to changes in the alternatives as well as in the modeling that occurred between the 2000 SNFPA Draft EIS and the 2001 FEIS.

Table 4.1.2a is an exact duplication of Table 2.5.1a presented in the 2004 SEIS (Volume 1, p. 95). Table 4.1.2b corrects the 2001 FEIS (and 2004 SEIS) error in the "percent change in number of large trees by the second decade" and also reflects the changes in modeling baseline vegetation and land allocation data and assumptions described above under Section 4.1.1. "SPECTRUM Modeling."

Table 4.1.2a. Comparison of Large Tree Retention and Old Forest Connectivity among the Alternatives (2004 SEIS).¹³

Variable	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Upper diameter limit for tree removal	30" west 24" east	30" west 30" east	30" west 21" east	30" west 21" east	30" west na east	30" west 21" east	30" west 21" east	defined by CWHR classes	30" west 21" east
Percent change in numbers of large trees by 2nd decade	+5.5%	+5.5%	+4.7%	+4.5%	+3.3%	+5.2%	+5.1%	+3.7%	+5.7%
Acreage of old forest allocation (millions of acres)	1.636	1.636	4.873	1.337	0.713	1.745	1.605	defined at project level	2.319

Note: west = westside; east = eastside

Table 4.1.2b. Comparison of Large Tree Retention and Old Forest Connectivity among the Alternatives (2013 SEIS Update).

Variable	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Upper diameter limit for tree removal	30" west 24" east	30" west 30" east	30" west 21" east	30" west 21" east	30" west na east	30" west 21" east	30" west 21" east	defined by CWHR classes	30" west 21" east
Percent change in numbers of large trees by 2nd decade	+9.5%	+9.1%	+9.5%	+9.4%	+8.3%	+9.2%	+9.3%	+8.0%	+9.7%
Acreage of old forest allocation (millions of acres)	1.636	1.636	4.873	1.337	0.713	1.745	1.605	defined at project level	2.319

Note: west = westside; east = eastside

¹³ Duplicate of Table 2.5.1a from 2004 SNFPA Final SEIS, Volume 1, p. 95

While the updated values are higher than those originally presented in the 2004 SEIS, the findings regarding the effects of the alternatives in terms of the change in the number of large trees remains the same as presented in the 2004 SEIS: all the alternatives show an increase in numbers of large trees by the end of the second decade, with Alternatives F4 and F7 showing lower increases compared to the other alternatives. This logically follows as all alternatives generally retain all trees greater than 30 inches in diameter as shown in Table 4.1.2b above (2004 SEIS, Volume 1, Chapter 2, p. 94). Alternative F4 has lower percent change because it has fewer acres of old forest allocation while Alternative F7 has a lower percent change because it has diameter limits that vary by CWHR type and defines old forest allocations at the project level. The change in the updated table does not change the discussion of the effects of the alternatives on the amount and distribution of old forest conditions presented in the 2004 SEIS (Volume 1, pp. 94 through 95)

Potential Losses to Severe Wildfires

Table 2.5.1b (2004 SEIS, Volume 1, p. 96) displays three variables to compare the annual wildfire acreages between Alternatives S1, S2, and F2 through F8: (1) annual acreage of wildfire in the first decade; (2) annual acreage of wildfire in the fifth decade; and (3) percent change in annual wildfire acreage from the first to fifth decade. SPECTRUM accounts for the condition of the vegetation structure over time, which is affected by growth, mortality, and treatments. For modeling purposes, wildfire frequencies are based on historical fire frequencies by forest type, for example, ponderosa pine, mixed conifer, eastside pine, and so forth (*See* 2001 FEIS, Volume 4, Appendix G, pp. G-12 through G-15). Fire severity coefficients describe the probability of mortality expected to occur when a wildfire burns in a particular forest type, under both treated and untreated vegetation conditions. Fire severity is expressed in terms of whether the fire results in lethal, mixed-lethal, or non-lethal effects, based on the condition of the vegetation. Alternatives F2 through F8 were modeled using the updated fire coefficients that were used to model Alternatives S1 and S2 in the 2004 SEIS (*See* 2004 FSEIS, Volume 1, Appendix B, p. 392, last bullet statement under B-1.2. "Changes in Analysis, Assumptions, and Input Data").

In carefully reviewing the values for "percent change in annual wildfire acreage from the first to fifth decade" for Alternatives F2 through F8 in Table 2.5.1b of the 2004 SEIS (Volume 1, p. 96), the interdisciplinary team discovered a previously unreported error in the 2001 FEIS, which was inadvertently repeated in the 2004 SEIS. Apparently, the 2001 FEIS had a simple miscalculation of the values for "percent change in annual wildfire acreage from the first to fifth decade" for Alternatives F2 through F8 (2001 FEIS, Volume 1, Chapter 2, p. 199, Table titled "Effect on Wildfire") by dividing the difference in wildfire acreage between the first and fifth decades by the annual acres of wildfire in the fifth decade (rather than the annual acres of wildfire in the first decade, as should have been done). The 2004 SEIS Table 2.5.1b (Volume 1, p. 96) erroneously presented the miscalculated values for Alternatives F2 through F8 from the 2001 FEIS. In addition, this same calculation error was applied to Alternatives S1 and S2 as presented in the 2004 SEIS.

Table 4.1.2c is an exact duplication of Table 2.5.1b presented in the 2004 SEIS (Volume 1, p. 96) with the error described above. Table 4.1.2d corrects the 2001 FEIS (and 2004 SEIS) miscalculation of the "percent change in annual wildfire acreage from the first to fifth decade" and also reflects the changes in modeling baseline data and assumptions described above under Section 4.1.1. "SPECTRUM Modeling."

Table 4.1.2c. Comparison of Annual Wildfire Acreage among the Alternatives (2004 SEIS).¹⁴

Variable	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Annual acreage of wildfire, first decade	64,000	60,000	68,561	65,804	61,730	69,008	65,705	64,800	67,002
Annual acreage of wildfire, fifth decade	63,000	49,000	76,315	48,381	44,380	71,933	49,579	49,340	62,988
Percent change in annual wildfire acreage from first to fifth decade	-2%	-22%	10%	-36%	-39%	4%	-33%	-31%	-6%

Alternative F4 has the greatest reduction in acres expected to burn annually, followed in order by Alternatives F3, F6, F7 and S2.

Table 4.1.2d. Comparison of Annual Wildfire Acreage among the Alternatives (2013 SEIS Update).

Variable	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Annual acreage of wildfire, first decade	64,000	60,000	68,061	64,734	62,549	66,025	63,115	64,682	65,915
Annual acreage of wildfire, fifth decade	63,000	49,000	75,439	49,834	47,137	67,935	49,207	52,186	61,048
Percent change in annual wildfire acreage from first to fifth decade	-2%	-18%	11%	-23%	-25%	3%	-22%	-19%	-7%

The updated values still result in Alternative F4 having the greatest reduction in acres expected to burn annually, followed in order by Alternatives F3, F6, F7 and S2.

While the corrected, updated values show a generally lower level of annual wildfire acreage reduction than indicated in the 2004 SEIS, they do not result in a change to the relationship between the effects of the alternatives in terms of "percent change in annual wildfire acreage from the first to fifth decade." The updated modeling results do not change the conclusion reached in the 2004 SEIS: "Alternative F4 has the greatest reduction in wildfire acreage expected to burn annually, followed in order by Alternatives F3, F6, F7, and S2" (Volume 1, p. 96).

¹⁴ Duplicate of Table 2.5.1b from 2004 SNFPA Final SEIS, Volume 1, p. 96

Table 4.1.2d does show a change from the 2001 values for "percent change in annual wildfire acreage between the first and fifth decades" for some of the alternatives (specifically Alternatives F3, F4, F6, and F7). However, this change is primarily due to the corrected recalculation of percent change in annual wildfire acreage between the first and fifth decades, rather than the modeling update. For example, if the percent change had been correctly calculated for Alternative F3 in the 2001 FEIS, it would have shown a 26 percent reduction in annual wildfire acres between the first and fifth decades. The updated modeling results in a 23 percent reduction in wildfire acreage under Alternative F3, which is only slightly less than the correctly calculated percent change in the 2001 FEIS wildfire acreages for this alternative.

The relative differences and rankings between the effects of the alternatives in terms of potential wildfire acres burned based on the updated modeling remain similar to that presented in the 2004 SEIS. Therefore, the analysis of effects of Alternatives S1, S2, and F2 through F8 on old forest conditions as indicated by potential losses to wildfire presented in the 2004 SEIS (Volume 1, pp. 95 through 96) remains unchanged by the updated modeling results.

Old Forest Ecosystem Functions and Processes

The updated modeling does not affect the comparison of Alternatives S1, S2 and F2 through F8 in terms of their effects on old forest ecosystem functions and processes presented in the Final SEIS (Volume 1, p. 96). This section of the Final SEIS is a qualitative comparison of the alternatives, based on their respective standards and guidelines, and remains unchanged.

4.1.3. Aquatic, Riparian, and Meadow Ecosystems

The updated modeling does not affect the comparison of Alternatives S1, S2 and F2 through F8 in terms of their effects on aquatic, riparian, and meadow ecosystems presented in the 2004 SEIS (Volume 1, pp. 96 through 97). This section of the 2004 SEIS presents a qualitative comparison of the alternatives, based on several factors, including the balance of acres treated and wildfire risk; treatment intensities based on each alternative's respective standards and guidelines; and requirements for landscape analysis, peer reviews, and special protections for aquatic and riparian ecosystems. This section of the 2004 SEIS remains unchanged by the updated modeling effort.

4.1.4. Fire and Fuels

Table 2.5.3a (2004 SEIS, Volume 1, p. 98) displays three variables to compare the effects of the alternatives on fire and fuels management: (1) annual acreage of mechanical fuels treatment; (2) annual acreage of prescribed burns; and (3) total acreage treated annually. Treatment acreages under each alternative depend on the alternative's management direction for various land allocations as well as standards and guidelines. As described in Section 2.2.1.1 above, land allocations (specifically protected activity centers for California spotted owls, northern goshawks, and great gray owls as well as wildland urban intermix zones) were updated for modeling Alternatives F2 through F8. In addition, the herringbone pattern of area treatments

used to model Alternatives S1 and S2 was also used to model those 2001 FEIS alternatives with direction for implementing a SPLAT strategy (Alternatives F3, F4, F6, F7, and F8).

Table 4.1.4a is an exact duplication of Table 2.5.3a presented in the 2004 SEIS (Volume 1, p. 98). Table 4.1.4b reflects the modeling results for Alternatives F2 through F8 based on the changes in baseline vegetation and land allocation data and modeling assumptions described above under Section 4.1.1. "SPECTRUM Modeling."

Table 4.1.4a. Comparison of Extent of Mechanical and Prescribed Fire Fuels Treatments among the Alternatives (2004 SEIS).¹⁵

	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Annual acreage of mechanical fuels treatment (gross treatment acres)¹⁶	51,345	72,200	7,022	30,081	86,168	9,858	33,381	70,045	13,867
Annual acreage of prescribed burns	49,560	42,020	15,457	53,582	46,760	39,356	82,747	60,113	69,038
Total acreage treated annually	100,905	114,220	22,479	83,663	132,928	49,214	116,128	130,158	82,905

Table 4.1.4b. Comparison of Extent of Mechanical and Prescribed Fire Fuels Treatments among the Alternatives (2013 SEIS Update).

	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Annual acreage of mechanical fuels treatment (gross treatment acres)¹⁷	51,345	72,200	8,099	25,084	84,273	10,509	31,388	67,112	15,801
Annual acreage of prescribed burns	49,560	42,020	20,486	63,483	50,987	45,591	73,250	45,487	61,176
Total acreage treated annually	100,905	114,220	28,585	88,567	135,260	56,100	104,638	112,599	76,977

As shown in Table 4.1.4b above, the updated values for most of the alternatives show a slightly higher acreage of treatments than those displayed in the 2004 SEIS (Table 4.1.4a above). However, the relationship between the effects of the alternatives in terms of "total acreage treated annually" presented in the 2004 SEIS remains essentially unchanged. The updated values move Alternative S2 above Alternatives F7 and F6 in terms of "total acreage treated annually;" however, Alternatives F4, S2, F7, F6, and S1 continue to be the alternatives projected to modify fuel loadings and change fire behavior the most. Hence, the updated values do not change the

¹⁵ Duplicate of Table 2.5.3a from 2004 SNFPA Final SEIS, Volume 1, p. 98

¹⁶ In the original Table 2.5.3a in the 2004 SEIS (Volume 1, p. 98), there was an incorrect footnote to the column for Alternative S1 that read "acres based on gross treatment acres". This footnote applied to all alternatives and should have been attributed to the entire row.

¹⁷ In the original Table 2.5.3a in the 2004 SEIS (Volume 1, p. 98), there was an incorrect footnote to the column for Alternative S1 that read "acres based on gross treatment acres". This footnote applied to all alternatives and should have been attributed to the entire row.

discussion of the effects of the alternatives on fire and fuels management presented in the 2004 SEIS (Volume 1, pp. 97 through 98).

4.1.5. Focal Species

Old Forest Associated Species

The 2001 SNFPA Final EIS and 2004 SEIS analyze the following focal species associated with old forest ecosystems: California spotted owl, northern goshawk, marten, fisher, Sierra Nevada red fox, and wolverine. The 2004 SEIS discusses potential effects of Alternatives S1, S2, and F2 through F8 on these old forest associated species based on several factors, including management standards and guidelines; projected changes in suitable habitat (as indicated by California Wildlife Habitat Relationship, CWHR, types) over time; extent of mechanical treatments; and potential reductions in habitat due to wildfire (2004 SEIS, Volume 1, pp. 98 through 101). The 2004 SEIS discussions of changes in suitable habitat over time are based on quantitative habitat acreage values presented in the 2001 FEIS. However, the 2004 SEIS does not duplicate the suitable habitat acreages that are reported in the 2001 FEIS for Alternatives F2 through F8.

The updated SPECTRUM modeling effort (described in Section 4.1.1. "SPECTRUM Modeling" above) would change the acreages in CWHR types over time reported for Alternatives F2 through F8 in the 2001 FEIS. The results from the updated SPECTRUM modeling for Alternatives F2 through F8 were carefully reviewed to determine whether the updated values would change the effects on suitable habitat (as indicated by CWHR type) discussed in the 2004 SEIS.

CWHR types 4M, 4D, 5M, 5D, and 6 define suitable habitat for the California spotted owl, northern goshawk, marten, fisher, and wolverine. Table 4.1.5a below presents the acreages of CWHR types 4M, 4D, 5M, 5D, and 6 at 50 years into the future under Alternatives F2 through F8 (*See* 2001 SNFPA Final EIS, Volume 3, Chapter 3, Part 4.4, Table 4.4.2.1f, p. 92). The values presented in Table 4.1.5a below provided the basis for assessing the effects of Alternatives F2 through F8 in the 2004 SEIS. Table 4.1.5b reflects the changed acreages in CWHR types for Alternatives F2 through F8 resulting from the changes in baseline vegetation and land allocation data and modeling assumptions described above under Section 4.1.1. "SPECTRUM Modeling."

Table 4.1.5a. Comparison between Alternatives of Moderate Suitability Habitat (CWHR 4M and 4D) and High Suitability Habitat (CWHR 5M, 5D, and 6) for Old Forest Associated Species 50 years into the future (from the 2001 FEIS).¹⁸

CWHR Type	Current (thousands of acres)	Alternative (thousands of acres)						
		F2	F3	F4	F5	F6	F7	F8
4M	1,206	780	856	890	814	830	857	802
4D	1,145	702	666	599	661	666	680	676
5M	662	1,065	1,221	1,372	1,110	1,249	1,229	1,143
5D	166	801	1,083	810	887	997	831	833
6	1,120	1,388	1,229	1,104	1,299	1,271	1,268	1,340
Total acres	4,301	4,740	5,058	4,774	4,766	5,019	4,873	4,791

Table 4.1.5b. Comparison between Alternatives of Moderate Suitability Habitat (CWHR 4M and 4D) and High Suitability Habitat (CWHR 5M, 5D, and 6) for Old Forest Associated Species 50 years into the future (2013 SEIS Update).¹⁹

CWHR Type	Current (thousands of acres)	Alternative (thousands of acres)								
		S1	S2	F2	F3	F4	F5	F6	F7	F8
4M	1,097	691	735	880	877	969	867	891	890	849
4D	1,140	775	797	838	812	776	811	805	907	1,107
5M	757	1,170	1,281	1,010	1,137	1,185	999	1,071	1,036	921
5D	166	2,205	2,208	703	867	787	707	807	737	784
6	955			1,304	1,204	1,150	1,183	1,163	1,305	1,431
Total acres	4,115	4,841	5,021	4,735	4,898	4,868	4,567	4,737	4,875	4,868

As shown in the tables above, the difference between the acreage values for CWHR types 4M, 4D, 5M, 5D, and 6 at 50 years into the future assumed in the analysis of effects for Alternatives F2 through F8 in the 2004 SEIS (Table 4.1.5a) and the updated values (Table 4.1.5b) are nominal given the current available acreages of each CWHR type (as indicated in the first column in Table 3.4b above). (Note that the updated vegetation data resulted in different existing acreages in each CWHR type, as indicated by comparing the first columns labeled "Current" in Tables 4.1.5a and 4.1.5b above.) As discussed in the 2004 SEIS, the quantity of suitable habitat for old forest associated species is projected to increase over 50 years under all of the alternatives, with Alternatives F3 and S2 showing the highest increases and Alternatives F2 and F5 showing the lowest increases. The updated CWHR acreages do not change the discussion of the effects of the alternatives on the California spotted owl, northern goshawk, marten, fisher, Sierra Nevada red fox, and wolverine presented in the 2004 SEIS (Volume 1, pp. 98 through 101).

¹⁸ Source: Table 4.4.2.1f from 2001 SNFPA Final EIS, Volume 3, Chapter 3, Part 4.4, p. 92. Acreages are calculated from the current acreage and the percent changes in habitat from the current conditions to 50 years into the future under each alternative.

¹⁹ Values for "current conditions" are from the 2004 SEIS, Volume 1, Table 4.3.2.3d, p. 268. Values for Alternatives S1 and S2 are from the 2004 SEIS, Volume 1, Table 4.3.2.3f, p. 268. Note that values for acres of CWHR 5D and 6 are combined.

Aquatic, Riparian, and Meadow Associated Species

The 2004 SEIS analyzes the effects of Alternatives S1, S2, and F2 through F8 on the following focal species associated with aquatic, riparian, and meadow ecosystems: willow flycatcher, foothill yellow-legged frog, mountain yellow-legged frog, Yosemite toad, Cascades frog, and northern leopard frog (2004 SEIS, Volume 1, pp. 98 through 99 and 101 through 102). This section of the 2004 SEIS presents a qualitative comparison of the alternatives, based on the degree of protection for known species sites as well as aquatic, riparian, and meadow ecosystems in general provided by each alternative's management standards and guidelines. These sections of the 2004 SEIS remain unchanged by the updated modeling effort.

4.1.6. Socio-Economic Concerns

Economy

Table 2.5.7a (2004 SEIS, Volume 1, p. 103) displays two variables to compare the effects of the alternatives on the economy: (1) estimated average annual jobs from commercial timber harvest on Sierra Nevada national forest lands in the first decade and (2) estimated total annual earnings from commercial timber harvest on Sierra Nevada national forest lands in the first decade. The updated SPECTRUM modeling (described under Section 4.1.1. "SPECTRUM Modeling" above) resulted in changes to the timber volume produced under Alternatives F2 through F8, which then resulted in changes to these economic variables.

Table 4.1.6a is duplicate of Table 2.5.7a presented in the 2004 Final SEIS (Volume 1, p. 103), as corrected by the 2004 SEIS errata, dated October 8, 2004. The errata corrects the 2004 SEIS socio-economic values presented for Alternatives S1, S2, and F6; changes the label for "average annual earnings" to "total annual earnings;" and adds footnotes on sources for the values presented in the table. Table 4.1.6b reflects the modeling results for Alternatives F2 through F8 based on the changes in baseline vegetation and land allocation data and modeling assumptions described above under Section 4.1.1. "SPECTRUM Modeling."

Table 4.1.6a. Comparison of Estimated Average Annual Employment and Total Annual Earnings from Commercial Timber Harvests on National Forests among the Alternatives in the First Decade (2004 SEIS).²⁰

Estimated average annual jobs	Alternative								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Estimated average annual jobs	459	1,894	145	566	3,467	322	525	2,730	222
Estimated total annual earnings (thousands \$, 1995)	22,854	57,159	7,458	26,099	116,023	14,345	26,136	89,913	12,212

²⁰ Values for average jobs generated from stumpage and milling (2001 FEIS, Volume 2, Chapter 3, Part 5.1, pp. 390 and 392. Values for total wages generated from logging (2001 FEIS, Volume 2, Chapter 3, Part 5.1, p. 393.

Table 4.1.6b. Comparison of Estimated Average Annual Employment and Total Annual Earnings from Commercial Timber Harvests on National Forests among the Alternatives in the First Decade (2013 SEIS Update).²¹

Estimated average annual jobs	Alternative								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Estimated average annual jobs	459	1,894	176	473	3,206	360	765	2,527	435
Estimated total annual earnings (thousands \$, 1995)	22,854	57,159	6,084	16,311	110,551	12,411	26,384	87,125	14,998

The updated modeling results do show changes from the 2004 SEIS values (brought forward from the 2001 FEIS) for "estimated average annual jobs" and "estimated total annual earnings" for Alternatives F2 through F8; however, the relative differences and rankings between the effects of the alternatives in terms of jobs and earnings related to commercial timber harvest on national forest lands remain similar to those presented in the 2004 Final SEIS. The updated values for "estimated average annual jobs" and "estimated total annual earnings" do not change the conclusion reached in the 2004 SEIS: "Alternatives F4, F7, and S2 would provide the largest number of jobs annually in the commercial logging sectors. Consequently, these alternatives would also result in the highest estimated annual earnings in these economic sectors" (Volume 1, p. 103).

Commercial Forest Products

Table 2.5.7b in the 2004 SEIS (Volume 1, p. 104) displays the modeled annual yield of green and salvage harvests by alternative for the first two decades. These estimates include the timber volumes produced under the Herger Feinstein Quincy Library Group (HFQLG) Pilot Project. SPECTRUM modeling outputs include timber harvest volumes, based on projected treatments under each alternative.

Table 4.1.6c is an exact duplication of Table 2.5.7b presented in the 2004 SEIS (Volume 1, p. 104). Table 4.1.6d reflects the modeling results for Alternatives F2 through F8 based on the changes in baseline vegetation and land allocation data and modeling assumptions described above under Section 4.1.1. "SPECTRUM Modeling."

²¹ Values for average jobs generated from stumpage and milling (2001 FEIS, Volume 2, Chapter 3, Part 5.1, pp. 390 and 392. Values for total wages generated from logging (2001 FEIS, Volume 2, Chapter 3, Part 5.1, p. 393.

Table 4.1.6c. Comparison of Estimated Annual Timber Harvest Volume (Green and Salvage) Offered for Sale from National Forests among the Alternatives (MMBF/yr) (2004 SEIS).

	Alternative								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
First Decade									
Salvage timber	30	90	17	33	238	29	91	142	42
Green timber	70	329	22	84	534	49	80	414	33
Total timber	100	419	39	117	722	78	171	556	75
Second Decade									
Salvage timber	30	90	17	33	238	29	91	142	42
Green timber	20	132	7	21	294	7	57	210	14
Total timber	50	122	24	54	522	36	148	352	56

Table 4.1.6d. Comparison of Estimated Annual Timber Harvest Volume (Green and Salvage) Offered for Sale from National Forests among the Alternatives (MMBF/yr) (2013 SEIS Update).

	Alternative								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
First Decade									
Salvage timber	30	90	17	32	207	27	85	140	42
Green timber	70	329	22	73	502	52	84	418	50
Total timber	100	419	39	105	709	80	169	558	96
Second Decade									
Salvage timber	30	90	17	31	214	27	82	138	46
Green timber	20	132	6	59	258	52	86	102	14
Total timber	50	122	23	90	472	80	168	240	60

As shown in Table 4.1.6d above, the updated values for most of the alternatives show either a slightly higher timber volume in the first decade (Alternatives F5, F7, and F8) or slightly lower timber volume in the first decade (Alternatives F3, F4, and F6) compared to the values displayed in the 2004 SEIS (Table 4.1.6c above). Total timber volume produced in the second decade show Alternatives F3, F5, F6, and F8 with higher values compared to those displayed in the 2004 SEIS and Alternatives F2, F4, and F7 with lower values. However, the relationship between the effects of the alternatives in terms of total annual timber harvest presented in the 2004 SEIS remains unchanged. The updated values for timber volume produced do not change the discussion of the effects of the alternatives on commercial forest products presented in the 2004 SEIS (Volume 1, p. 103).

The 2004 SEIS also summarizes the estimated commercial biomass output that could be available for sale under each alternative in the first decade (2004 SEIS, Volume 1, Table 2.5.7c, p. 104). Table 4.1.6e below is an exact duplication of Table 2.5.7c presented in the 2004 SEIS

(Volume 1, p. 104). Table 4.1.6f reflects the modeling results for Alternatives F2 through F8 based on the changes in baseline vegetation and land allocation data and modeling assumptions described above under Section 4.1.1. "SPECTRUM Modeling."

Table 4.1.6e. Comparison among the Alternatives of Potential Commercial Biomass Output from National Forests in the First Decade (1,000s of bone dry tons) (2004 SEIS).

Alternative								
S1	S2	F2	F3	F4	F5	F6	F7	F8
4,385	7,021	660	2,440	6,200	1,710	2,910	6,680	1,720

Table 4.1.6f. Comparison among the Alternatives of Potential Commercial Biomass Output from National Forests in the First Decade (1,000s of bone dry tons) (2013 SEIS Update).

Alternative								
S1	S2	F2	F3	F4	F5	F6	F7	F8
4,385	7,021	900	2,830	5,720	2,170	2,830	7,430	2,040

While the updated values for commercial biomass output for Alternatives F2 through F8 are generally higher than the values presented in the 2004 SEIS (with the exception of Alternatives F4 and F6, which declined slightly), the updated values do not alter the relationship between the alternatives in terms of projected commercial biomass output from the Sierra Nevada national forests in the first decade. As disclosed in the 2004 SEIS, Alternatives S2, F7, F4, and S1 are projected to produce the largest amounts of commercial biomass compared to the other alternatives (2004 SEIS, Volume 1, p.104) (Note that the ordering of Alternatives S2 and F7 changes with the updated modeling; however, the degree of change is minor).

Grazing

Analysis of potential effects of the alternatives on livestock grazing is based on a spatial assessment of the extent to which each alternative's standards and guidelines would limit grazing opportunities (*See* 2001 FEIS, Volume 2, Chapter 3, Part 5.3, p. 404). The updated SPECTRUM modeling does not affect this analysis process; hence, the grazing effects comparison of Alternatives S1, S2, and F2 through F8 presented in the 2004 SEIS (Volume 1, pp. 104 through 105) remains unchanged.

Roads

Analysis of the effects of the alternatives on national forest roads is a qualitative assessment based on the degree of active management under the alternatives. The updated SPECTRUM modeling does not affect this assessment; hence, the effects of Alternatives S1, S2, and F2 through F8 on roads presented in the 2004 SEIS (Volume 1, p. 105) remain unchanged.

Air Quality

Emissions of particulate matter larger than 10 microns (PM₁₀) would be expected to differ by alternative in proportion to the acreages of wildfire and prescribed burning that would occur under each alternative. As described in Section 4.1.1. and under the "Old Forest Ecosystems" and "Fire and Fuels" sections above, the updated SPECTRUM modeling resulted in different acreages of wildfire and prescribed burning treatments, which in turn affect the emissions values.

Table 4.1.6g below is an exact duplicate of Table 2.5.7f (2004 SEIS, Volume 1, p. 106), which displays annual emissions of PM₁₀, based on acreages of wildfire and prescribed burning projected for each alternative. Table 4.1.6h displays particulate matter emissions for Alternatives F2 through F8 based on the changes in baseline vegetation and land allocation data and modeling assumptions described above under Section 4.1.1. "SPECTRUM Modeling."

Table 4.1.6g. Comparison of Particulate Emissions among the Alternatives in the First Decade (Tons of PM₁₀) (2004 SEIS).

Annual wildfire emissions	Alternative								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
	23,700	22,600	25,300	24,300	22,800	25,500	24,200	24,000	24,700
Annual prescribed fire emissions	2,000	2,400	3,500	12,600	11,900	9,200	18,100	13,900	14,500
Total annual emissions	25,700	25,000	28,800	36,900	34,700	34,700	42,300	37,900	39,200

Table 4.1.6h. Comparison of Particulate Emissions among the Alternatives in the First Decade (Tons of PM₁₀) (2013 SEIS Update).

Annual wildfire emissions	Alternative								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
	23,700	22,600	25,100	23,900	23,100	24,400	23,200	24,000	25,800
Annual prescribed fire emissions	2,000	2,400	4,400	13,300	12,100	10,500	14,900	12,000	13,500
Total annual emissions	25,700	25,000	29,500	37,200	35,200	34,900	38,100	36,000	39,300

Comparison of Tables 4.1.6g and 4.1.6h above show that the updated modeling effort for Alternatives F2 through F8 resulted in nominal changes in the values for particulate matter emissions. The updated values do not change the discussion of the effects of the alternatives on air quality presented in the 2004 SEIS (Volume 1, p. 106).

Recreation

Effects on recreation are assessed in qualitative terms based on each alternative's management theme and emphasis. The updated SPECTRUM modeling does not affect this assessment; hence, the effects of Alternatives S1, S2, and F2 through F8 on recreation presented in the 2004 SEIS (Volume 1, p. 106) remain unchanged.

4.2. Forest Health and Ecosystem Restoration Objectives

This section of the SEIS evaluates the alternatives in terms of the following objectives: (1) reducing stand density for forest health; (2) restoring and maintaining ecosystem structure and composition; and (3) restoring ecosystems after severe wildfires and other large catastrophic disturbance events.

4.2.1. Reducing Stand Density for Forest Health

Factors Used to Evaluate the Alternatives

The density of a forest stand is a key factor in determining its vulnerability to mortality from prolonged drought conditions, insects, and pathogens. An extensive body of scientific literature (including Rabin et al. 2009, Oliver 2005, Oliver 1979) shows that lower tree densities increase individual tree growth rates and result in lower tree mortality rates as trees gain improved access to soil moisture, sunlight, and soil nutrients. Treatments to reduce fire hazard typically focus on reducing surface fuels and small diameter trees that are considered ladder fuels. Treatments to improve forest health differ by focusing on removing a variety of tree sizes and targeting certain tree species in order to reduce competition and achieve the desired composition of the remaining forest stand (Fettig 2008, Grulke 2008, Sherlock 2008). Said another way, treatments designed for reducing fire hazard focus on what is removed, while treatments to address non-fire forest health objectives focus on what remains in the treated forest area (Sherlock 2008).

The alternatives can be compared in terms of the level of opportunities they provide for forest managers to take action to reduce the densities of forest stands at risk of mortality due to overcrowding. Two indicators are combined to assess the degree to which each alternative provides opportunities for reducing forest stand density to improve forest health: (1) the amount of projected mechanical thinning acres, (recognizing that thinning allows managers to select specific trees to retain in the residual stand, whereas prescribed fire does not provide this level of control and may kill the desired leave trees) and (2) the degree to which the alternative's standards and guidelines allow managers to sufficiently reduce stand density to address local forest health problems. While prescribed fire can reduce stand densities, projected prescribed fire acreages under each alternative are not included as an indicator for this analysis because application of prescribed fire in dense stands is not realistic given the potential for the fire to cause excessive tree mortality as well as the potential for the fire to escape.

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Table 4.2.1. below displays the projected annual acres of mechanical thinning treatments under each alternative.

Table 4.2.1. Comparison of Extent of Mechanical Fuels Treatments among the Alternatives.

Annual acreage of mechanical fuels treatment (gross treatment acres) ²²	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
	51,345	72,200	8,099	25,084	84,273	10,509	31,388	67,112	15,801

The alternatives take different approaches in how they address the five problem areas, in particular the problem areas related to: fire and fuels; old forest ecosystems and associated species; and aquatic, riparian, and meadow ecosystems and associated species (2001 SNFPA ROD, pp. 1 through 3; 2004 SNFPA ROD, pp. 3 through 11). This accounts for the differences in the acreage available for mechanical fuels treatments between the alternatives. Alternatives F4, S2, and F7 have the highest projected annual acreages of mechanical thinning treatments. Alternatives F2, F5, and F8 have the least projected acreages of mechanical thinning treatments, while Alternatives S1, F3, and F6 fall between the alternatives with the highest and lowest projected amounts of mechanical treatments.

The management themes of both Alternatives F4 and F7 speak to the need to address forest health problems (2001 FEIS, Volume 1, Chapter 2, pp. 104 and 144). Stand-level management standards and guidelines for Alternative F4 and F7 reflect these alternatives' themes of developing and maintaining forest ecosystems that are highly resilient to severe disturbances, including insects, pathogens, and droughts. The standards and guidelines for these alternatives provide managers with a high degree of local flexibility to reduce stand density for forest health. For example, Alternatives F4 and F7 do not have stand-level canopy closure or basal area retention requirements, but instead use desired conditions for a landscape vegetation mosaic to guide project design. This approach allows managers maximum flexibility to tailor stand-level density reduction treatments to address local forest health problems (2001 FEIS, Volume 1, Chapter 2, pp. 106 through 107 and pp. 146 through 147). These alternatives' stand structure standards and guidelines, combined with their projected mechanical thinning acreages, make them the most responsive alternatives to the objective of reducing stand density to address forest health.

Alternative F2 lies at the opposite end of the spectrum compared to Alternatives F4 and F7. Alternative F2 responds to the view that natural processes may be the most effective means for sustaining forest ecosystems. As such, this alternative establishes an extensive network of large forest reserves across the Sierra Nevada (approximately 70 percent of the national forest lands would be in reserves). Active forest management is largely avoided within the reserves, in which only wildland fire and prescribed fire can be used (2001 FEIS, Volume 1, Chapter 2, pp. 83 and 85). Of all the alternatives, Alternative F2 provides the least opportunities for forest managers to actively treat forest stands to address forest health problems. This, combined with the low

²² In the original Table 2.5.3a in the 2004 SEIS (Volume 1, p. 98), there was an incorrect footnote to the column for Alternative S1 that read "acres based on gross treatment acres". This footnote applied to all alternatives and should have been attributed to the entire row.

projected mechanical thinning acreages, makes Alternative F2 the least responsive alternative for reducing stand density to address forest health.

Alternatives F5 and F8 provide managers with limited opportunities for using mechanical thinning to reduce stand density. Under Alternative F5 a relatively high proportion of the Sierra Nevada national forest land base falls within land allocations that are generally managed using prescriptive standards and guidelines that limit the intensity of mechanical thinning treatments. For example, approximately 40 percent of national forest lands fall within old forest emphasis areas, where mechanical thinning treatments would focus on removing only excessive small diameter fuels. Nearly 30 percent of Sierra Nevada national forest lands would be managed in unroaded area reserves, in which timber harvest would be prohibited (2001 FEIS, Volume 1, Chapter 2, pp. 75 and 113 through 115). Alternative F8 responds to uncertainty about the possible adverse effects of mechanical forest thinning treatments on habitat for old forest associated species. As such, its standards and guidelines require managers to retain dense stand structures where they currently exist. Alternative F8's stand structure standards and guidelines are designed to ensure that mechanical thinning treatments do not reduce the quality and quantity of existing dense stands which are considered suitable nesting and foraging habitat for the California spotted owl and other old forest associated species; hence, managers have very limited opportunities for reducing stand density to address forest health (2001 FEIS, Volume 1, Chapter 2, pp. 154 through 158). Given the land allocations, stand structure standards and guidelines, and relatively low acreages of projected mechanical thinning treatments, Alternatives F5 and F8 provide very limited opportunities to reduce stand density to respond to local forest health problems. After Alternative F2, these alternatives rank the lowest for providing managers with opportunities for reducing stand density to address forest health problems.

Alternative S1 ranks slightly higher than Alternatives F2, F5, and F8 in terms of providing opportunities to reduce stand density to address forest health problems. While Alternative S1 does not have the extensive network of reserved areas under Alternatives F2 and F5, its stand structure standards and guidelines are similar to those proposed under Alternative F8. Under Alternative S1, mechanical thinning treatments are generally limited to removing trees less than 12 inches diameter at breast height (dbh) and reducing canopy cover in dominant and codominant trees by no more than 10 percent (2004 SEIS, Volume 1, p. 46). There are exceptions to these standards and guidelines for thinning in defense zones of the urban intermix zone and under specific stand conditions; however, opportunities for reducing stand density to address forest health are limited under this alternative. Although the projected acreage of treatments appears to place this alternative higher in the ranking, its restrictive standards and guidelines for mechanical thinning treatments mean that treatments would not sufficiently reduce stand densities to respond to forest health issues.

Alternatives F3 and F6 rank higher than Alternatives F2, F5, F8, and S1 in terms of providing opportunities to address forest health problems. Alternative F3's vegetation structure standards and guidelines are generally applied at a landscape scale, with collaborative, landscape-level planning used to determine desired amounts of forest cover and other vegetation conditions.

Alternative F6 has standards and guidelines based on achieving landscape- and patch-scale vegetation mosaic desired conditions for different forest types. Under both Alternatives F3 and F6, standards and guidelines provide managers with opportunities to reduce high stand densities to respond to forest health problems (as prescribed under site-specific, locally determined conditions), provided that overall vegetation mosaic desired conditions are achieved. This landscape-level approach allows managers the flexibility to respond to stand-by-stand forest health problems. However, because both Alternatives F3 and F6 place a heavy emphasis on using prescribed fire to achieve desired conditions, they would be less responsive to forest health concerns than alternatives that rely more on mechanical thinning with standards and guidelines that allow sufficient stand density reduction (Alternatives F4, F7, and S2).

Alternative S2 is next in the ordering, above Alternatives F2, F5, F8, S1, F3, and F6 and below Alternatives F4 and F7, in terms of opportunities for responding to local forest health issues. The stand structure standards and guidelines of Alternative S2, while retaining important habitat elements for old forest associated species (including large trees, canopy cover, stand basal area), provide substantially more opportunities for managers to remove some medium-sized trees to reduce stand densities to address stand-level forest health problems. Importantly, Alternative S2 specifically provides for consideration of managing for “stand densities necessary for healthy forests during drought conditions” (2004 SNFPA ROD, Standard and Guideline #2, p. 49) while meeting other requirements. This allows site-specific projects to be designed to consider more than just the treatments necessary to modify fire hazard under alternatives like S1. Treatment unit prescriptions for tree removal could consider tree species, tree size, spacing between trees and local site conditions in concurrently reducing fire hazard as well as improving the remaining trees’ resistance to mortality from drought and drought-related bark beetle attacks (Fettig 2008; Grulke 2008; Sherlock 2008). While Alternative S2 has the second highest acreage of mechanical thinning treatments (after Alternative F4), the mechanical thinning standards and guidelines limit the extent to which thinning treatments can address forest health problems, compared to those of Alternatives F4 and F7.

Summary

The alternatives were evaluated based on (1) the amount of projected mechanical thinning acres; and (2) the degree to which the alternative’s standard and guidelines allow managers to sufficiently reduce stand density to address local forest health problems. The alternatives that provide for the opportunity to reduce stand densities to address forest health are Alternatives F4, F7, and S2, which project the use of mechanical treatment on the most acres. These alternatives allow the flexibility needed to remove larger trees, including medium sized trees between 20” to 30” in diameter, when necessary to reduce stand density and reduce stand risk from attack by bark beetles. These alternatives also allow projects to be designed to implement the amount of forest thinning required to reduce competition between trees for limited site resources, increasing the remaining trees’ resistance to mortality from drought and insect attacks. Alternatives with the least opportunity to reduce stand density to address forest health are

Alternatives F2, F5, F8, and S1, which project fewer acres of mechanical treatment. While these alternatives may allow for treatments that would reduce wildfire hazards, the restrictions on areas that can be treated and the limit on the size of trees that can be removed limit their ability to reduce competition between trees, which in turn limits their ability to improve forest health. Although the projected acreage of treatments appears to place Alternative S1 higher in the ranking, its restrictive standards and guidelines for mechanical thinning treatments mean that treatments would not sufficiently reduce stand densities to respond to forest health issues.

4.2.2. Restoring and Maintaining Ecosystem Structure and Composition

Factors Used to Evaluate the Alternatives

All of the alternatives are aimed at the goal of restoring and maintaining ecosystem structure and composition. What differentiates them is the approach they use to achieve this goal. Some alternatives envision that natural processes proceed to the greatest extent possible to achieve this goal while other alternatives emphasize the need for active human management to restore and maintain ecosystems that have been extensively altered by human intervention, or lack thereof (as in the case of fire exclusion in Sierra Nevada national forests over the past century),

The relative ability for managers to restore and maintain ecosystem structure and composition under each alternative can be evaluated by comparing the following three characteristics of each alternative: (1) management emphasis (based on its overall management theme), (2) the acreage of projected treatments (for example, mechanical thinning versus prescribed fire) and percent change in annual wildfire acreage from the first to the fifth decade, and (3) the degree to which the alternative provides opportunities for active management to achieve goals for restoring and maintaining ecosystem structure and composition.

The values for the “Management Emphasis” for Table 4.2.2. below are derived from Table 2.4.3a in the 2001 SNFPA FEIS, Volume 1, Chapter 2, p. 70 for alternatives F2 through F8 with comparable values for alternatives S1 and S2 added. The values for acres of mechanical fuels treatment and prescribed burns is from Table 4.1.4b (above) and the values for percent change in annual wildfire acreages is from Table 4.1.2d (above).

*Environmental Consequences***Table 4.2.2.** Comparison of Management Emphasis, Extent of Mechanical and Prescribed Fire Fuels Treatments, and Percent Change in Annual Wildfire Acreage among the Alternatives (2013 SEIS Update).

	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Management Emphasis	protection, restoration	restoration, resiliency	protection	protection, restoration	resiliency	protection, restoration	restoration	restoration resiliency	protection, restoration
Annual acreage of mechanical fuels treatment (gross treatment acres)²³	51,345	72,200	8,099	25,084	84,273	10,509	31,388	67,112	15,801
Annual acreage of prescribed burns	49,560	42,020	20,486	63,483	50,987	45,591	73,250	45,487	61,176
Total acreage treated annually	100,905	114,220	28,585	88,567	135,260	56,100	104,638	112,599	76,977
Percent change in annual wildfire acreage from first to fifth decade	-2%	-18%	11%	-23%	-25%	3%	-22%	-19%	-7%

Alternative S1

Alternative S1's approach for conserving old forest ecosystems and associated species and for managing fire and fuels responds to concerns that impacts from mechanical fuels treatments may pose greater risks to habitats than the risks posed by potential wildland fires. Similar to the management emphasis of Alternative F8, Alternative S1 applies a cautious approach for managing fuels and forest vegetation in habitats for sensitive species, particularly species associated with old forest ecosystems. The management emphasis is considered to favor protection and restoration.

Alternative S1 is projected to mechanically thin approximately 51,345 acres annually across the Sierra Nevada national forests and treat approximately 49,560 acres with prescribed fire. The level of prescribed fire use is nearly the same as the levels projected under Alternatives F4 and F3, with similar public concerns about adverse air quality impacts and the potential for escaped fires as well as limited opportunities to use prescribed fire in dense stands due to the potential for excessive tree mortality. The mechanical thinning and prescribed fire treatments under Alternative S1 results in a projected reduction in the wildfire acreage burned annually, a small decrease (2 percent) in wildfire acres burned from the first to fifth decade.

²³ In the original Table 2.5.3a in the 2004 SEIS (Volume 1, p. 98), there was an incorrect footnote to the column for Alternative S1 that read "acres based on gross treatment acres". This footnote applied to all alternatives and should have been attributed to the entire row.

Alternative S1 would increase old forest patches with high and moderate canopy closure (cover) in the short term; however, these increases could be offset by future wildfire projected under this alternative. Alternative S1 retains canopy cover and limits the sizes of trees that can be removed during fuels treatments. These restrictions limit the effectiveness that treatments would have in reducing stand density. Likewise, few areas would be suitable for the establishment of pine species due to the limited ability to create openings. The greatest restrictions on mechanical thinning treatments apply in denser stands generally comprised of medium to large sized trees, which would be subject to loss due to high severity wildfire.

Alternative S1 provides a low to moderate level of intentional, guided active management to achieve ecosystem restoration and maintenance goals based on: (1) an emphasis on using prescribed fire, which has operational obstacles, particularly impacts from smoke on air quality, inability to safely use fire in dense forest stands without excessive tree mortality, and risk of fire escape; (2) a low degree of management flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and (3) restrictive stand structure standards and guidelines that limit options for mechanically thinning stands to achieve ecosystem restoration and maintenance goals.

Alternative S2

Alternative S2 provides for the use of thinning, salvage, and prescribed and natural fires to make forests less susceptible to the effects of uncharacteristically severe wildfires, as well as invasive pests and diseases. This alternative also provides for reducing stand density and regenerating shade intolerant species. Alternative S2 adopt an integrated vegetation management strategy with the primary objective of protecting communities and modifying landscape-scale fire behavior to reduce the size and severity of wildfires. The management emphasis is considered to favor restoration and resiliency.

Alternative S2 is projected to mechanically thin approximately 72,200 acres annually across the Sierra Nevada national forests and treat approximately 42,020 acres with prescribed fire. The extensive amount of fuels treatment under Alternative S2 results in a projected reduction in the wildfire acreage burned annually, an 18 percent decrease in wildfire acres burned from the first to fifth decade.

Like Alternative's F5, F8 and S1, Alternative S2 has standards and guidelines to ensure that mechanical thinning treatments retain important old forest habitat elements (for example, canopy cover and medium to large sized trees). However, Alternative S2's stand structure standards and guidelines provide greater flexibility to local managers to design projects to respond to local conditions, while meeting desired future conditions unique to each land allocation. The standards and guidelines for mechanical thinning treatments under Alternative S2 allow managers to rapidly alter forest structure and species composition under more controlled conditions as compared to using prescribed fire or natural processes to achieve ecosystem maintenance and restoration goals.

Alternative S2 provides a moderate to high level of intentional, guided active management to achieve ecosystem restoration and maintenance goals based on: (1) an emphasis on active management across forest landscapes; (2) a moderate to high degree of management flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and (3) a variety of silvicultural tools available for managers to apply to restore and maintain ecosystem structure and composition.

Alternative F2

Alternative F2 establishes large reserves across the Sierra Nevada national forests in which active management is very limited. The theme of this alternative is consistent with the view that natural processes, without human intervention, are most effective at restoring and maintaining ecosystem structure and function. This alternative proposes minimal active management, primarily within urban wildland intermix zones, and does not propose active management as an approach for restoring or maintaining ecosystem structure and composition. The management emphasis is considered to favor protection.

Under Alternative F2, an average of 8,099 acres would be treated by mechanical thinning on an annual basis across the 11.5 million acres of Sierra Nevada national forest lands, and 20,486 acres would be treated with prescribed fire. The limited treatment acreage under this alternative results in the greatest wildfire acreage burned annually compared to the other alternatives, an 11 percent increase in annual wildfire acres from the first to fifth decade.

Though Alternative F2 establishes approximately 4,900,000 acres in large reserves, a low degree of confidence exists that there would be no adverse effect on old forest habitats because wildfire losses are likely to increase and would offset gains in old forest habitat. Concern about the potential management effects on old forest function would be minimized under this alternative due to the limited amount of mechanical treatments.

Alternative F2 allows for only minimal intentional management actions aimed at maintaining and restoring ecosystem structure and composition due to its extensive acreage in reserves; its low degree of flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and the limited ability for managers to use all silvicultural methods.

Alternative F3

The management theme for Alternative F3 calls for active management in some areas and protection of other reserved areas in order to maintain and restore ecosystem structure and composition. The management emphasis is considered to favor protection and restoration.

Under Alternative F3, an average of 25,084 acres would be mechanically thinned on an annual basis and 63,483 acres would be treated by prescribed fire annually. The fuels strategy would be determined on a watershed rather than a larger landscape scale, and would increase the use of prescribed fire, emphasizing fuels reductions in areas of high fire hazard and risk, focused in

urban wildland intermix zones. The level of prescribed fire use is approximately the same as under Alternative S1, accompanied by the uncertainty that managers would be able to implement this amount of prescribed burning due to public concerns about the potential adverse impacts of smoke and the potential for escaped fires. The extent of fuels treatments would reduce the acreage of burned annually by wildfire, a 23 percent decrease in annual wildfire acres from the first to fifth decade. Restoration of structure and function would be largely limited to coincidental changes resulting from prescribed fire, as described for Alternative S1 below.

Alternative F3 establishes nearly 2 million acres of old forest emphasis areas and ecologically significant areas in which management would be focused on restoring low to moderate intensity fires through the use of prescribed fire. As explained above, the level of prescribed fire treatments projected under this alternative would likely not be achieved. Concerns about the potential adverse effects of mechanical treatments on old forest function would largely be avoided due to this alternative's emphasis on using prescribed fire in areas of high quality late successional forest.

Alternative F3 provides a moderate level of intentional, guided active management to achieve ecosystem restoration and maintenance goals based on: (1) the protection of unroaded areas; (2) an emphasis on re-introducing fire in old forest emphasis areas and ecologically significant areas; (3) a moderate degree of management flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and (4) a somewhat limited ability for managers to use all silvicultural tools, particularly in unroaded areas, old forest emphasis areas, and ecologically significant areas.

Alternative F4

Alternative F4 is focused on active human management to develop ecosystems that are resilient to large-scale, severe disturbances caused by fire, drought, insects, and diseases. The management emphasis is considered to favor resiliency.

Alternative F4 is projected to mechanically thin approximately 84,273 acres annually across the Sierra Nevada national forests and treat approximately 50,987 acres with prescribed fire. The level of prescribed fire use is nearly the same as the levels projected under Alternatives S1 and F3, with similar public concerns about adverse air quality impacts and the potential for escaped fires. The extensive amount of fuels treatment under Alternative F4 results in a projected reduction in the wildfire acreage burned annually, a 25 percent decrease in wildfire acres burned from the first to fifth decade.

Alternative F4 would maintain 20 percent of watersheds in old forest patches with high and moderate canopy closure (cover). Of all the alternatives, Alternative 4 would have the highest potential to protect old forest patches from wildfire losses. Moderately-sized blocks of old forest would be widely distributed and hence more limited in terms of providing habitat continuity for wide-ranging wildlife species associated with old forest conditions. Concerns about the potential effects of mechanical thinning treatments on old forest function would be highest under

Alternative F4 as it projects the highest level of mechanical thinning treatments compared to the other alternatives.

Alternative F4 provides a high level of intentional, guided active management to achieve ecosystem restoration and maintenance goals based on: (1) an emphasis on active management across forest landscapes; (2) a high degree of management flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and (3) a wide range of silvicultural tools available for managers to apply to restore and maintain ecosystem structure and composition.

Alternative F5

Alternative F5 focuses on preserving existing undisturbed areas and restoring other areas to achieve ecological goals through a low to moderate degree of active management. While this alternative's prescriptive standards and guidelines result in a low degree of local flexibility to adjust treatments to respond local conditions, they are designed to ensure management consistency across the Sierra Nevada national forests. The management emphasis is considered to favor protection and restoration.

Alternative F5 is projected to mechanically thin approximately 10,509 acres annually across the Sierra Nevada national forests and treat approximately 45,591 acres with prescribed fire.

Alternative F5 emphasizes treating forests with prescribed fire to achieve goals for restoring ecosystem structure and composition. Due to the uncertainty in the ability to carry out the level of burning called for under this alternative and the associated public concerns regarding smoke impacts and the potential for escaped fires, the ability to restore forest structure on a large scale would likely be less effective compared to alternatives with higher acreages of mechanical thinning treatments, such as Alternatives F4, F7, and S2. Only a limited portion of the landscape would be available for mechanical treatments, whereby activities can be more controlled to achieve site-specific structural and species composition goals. Annual wildfire acres from the first to fifth decade are projected to increase by 3 percent under Alternative F5. Concerns about the potential adverse effects of severe wildfire on old forest habitats are higher under this alternative compared to all alternatives, except Alternative F2, due to the projected increased losses to wildfire.

Alternative F5 could increase acreages in old forest patches with high and moderate canopy closure (cover) in the short term; however, because of this alternative's less effective landscape-scale fuel treatment strategy (Alternative F5 does not have direction for strategically placed area treatments, SPLATS), the increased acreage in old forest patches could be offset by increased future losses to severe wildfire. This alternative would have high likelihood of connectivity between large blocks dedicated to old forests, and minimal concerns associated with the potential adverse effects of mechanical treatment on old forest function.

Alternative F5 provides a low to moderate level of intentional active management to achieve ecosystem restoration and maintenance goals based on: (1) the protection of unroaded areas,

including smaller ecologically significant unroaded areas, in which natural processes shape desired conditions; (2) an emphasis on using prescribed fire in areas where active management can be conducted; (3) a low degree of management flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and (4) a limited ability for managers to use all silvicultural methods, particularly in unroaded areas and old forest emphasis areas.

Alternative F6

Alternative F6 is designed to integrate desired conditions for old forest and hardwood ecosystems with fire and fuels management strategies. With a moderate degree of active management and local flexibility, this alternative emphasizes re-introducing fire into Sierra Nevada forest ecosystems. The management emphasis is considered to favor restoration.

Alternative F6 is projected to mechanically thin approximately 31,388 acres annually across the Sierra Nevada national forests and treat approximately 73,250 acres with prescribed fire. The projected fuels treatments under this alternative would reduce the wildfire acreage burned annually by 22 percent from the first to fifth decade. As in the other alternatives that emphasize prescribed fire as the primary ecosystem maintenance and restoration tool (Alternatives F3 and F5), restoration of ecosystem structure and function is less precise and less predictable compared to alternatives that provide managers with the ability to apply a broader array of treatment types, particularly mechanical thinning treatments.

Alternative F6 would likely result in increased acreage in old forest patches with high and moderate canopy closure (cover). This alternative provides a high degree of certainty that more old forest patches could be protected from wildfire losses. This alternative's emphasis on prescribed fire (combined with a substantial proportion of mechanical treatments) results in a low to moderate level of concern associated with the potential adverse effects of mechanical treatments on old forest function.

Alternative F6 provides a moderate level of intentional, guided active management to achieve ecosystem restoration and maintenance goals based on: (1) integration of the old forest and fire and fuels strategies; (2) an emphasis using prescribed fire to achieve ecosystem restoration goals; (3) a moderate degree of management flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and (4) the ability for managers to use an array of silvicultural tools to actively manage forest ecosystems.

Alternative F7

Alternative F7 employs a whole forest approach in which entire landscapes are actively managed to establish and maintain a mosaic of forest conditions approximating patterns expected under natural conditions. The management emphasis is considered to favor restoration and resiliency.

Alternative F7 is projected to mechanically thin approximately 67,112 acres annually across the Sierra Nevada national forests and treat approximately 45,487 acres with prescribed fire. The level of prescribed fire use is similar to the levels projected under Alternatives S1 and F3, so this alternative would have similar public concerns about adverse air quality impacts and the potential for escaped fires. The extensive fuels treatments under this alternative would reduce the wildfire acreage burned annually by 19 percent from the first to fifth decade.

Alternative F7 does not establish old forest emphasis areas; rather, the amount and distribution of moderate-sized blocks dedicated to old forests would be determined at the landscape scale, based on defined desired conditions for vegetation mosaics in different forest types. Thus, this alternative has some uncertainty about the development and maintenance of old forest patches. Concerns about the potential effects of mechanical thinning treatments on old forest function would be high under Alternative F7 as it has among the highest levels of mechanical thinning treatments compared to the other alternatives: only Alternatives F4 and S2 project higher acreages of mechanical treatments.

Alternative F7 provides a moderate to high level of intentional, guided active management to achieve ecosystem restoration and maintenance goals based on: (1) an emphasis on active management across forest landscapes; (2) a high degree of management flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and (3) a wide range of silvicultural tools available for managers to apply to restore and maintain ecosystem structure and composition.

Alternative F8

Alternative F8 applies a cautious approach to managing sensitive wildlife habitats, particularly for species associated with old forest conditions. This alternative responds to concerns about the potential adverse effects of thinning treatments on habitats for these species, and relies on stand structure retentions standards and guidelines to ensure thinning treatments do not reduce habitat quality or quantity. The management emphasis is considered to favor protection and restoration.

Alternative F8 is projected to mechanically thin approximately 15,801 acres annually across the Sierra Nevada national forests and treat approximately 61,176 acres with prescribed fire. The projected fuels treatments under this alternative would reduce the wildfire acreage burned annually by 7 percent from the first to fifth decade. As in the other alternatives that emphasize prescribed fire as the primary ecosystem maintenance and restoration tool (Alternatives F3, F5, and F6), restoration of ecosystem structure and function under Alternative F8 would be less precise and less predictable compared to alternatives that provide managers with more opportunities for altering forest structure and species composition under more controlled conditions (specifically through mechanical thinning). The high level of prescribed fire use under Alternative F8 increases the risk of fire escape and potentially adverse effects on air quality and scenic conditions.

Alternative F8 would increase old forest patches with high and moderate canopy closure (cover) in the short term; these large blocks are dedicated to old forests, with their extent determined through analysis of habitat needs. However, these increases could be offset by increased future losses to severe wildfire. The most restrictions on mechanical fuel treatments would apply in areas likely to contain concentrations of old forests, which would be subject to loss due to high severity wildfire.

Alternative F8 provides a moderate level of intentional, guided active management to achieve ecosystem restoration and maintenance goals based on: (1) an emphasis on using prescribed fire, which has operational obstacles, particularly impacts from smoke on air quality, inability to safely use fire in dense forest stands without excessive tree mortality, and risk of escapes; (2) a low degree of management flexibility to respond to changing local conditions, e.g., forest health problems such as pests, disease, and catastrophic fire events; and (3) restrictive stand structure standards and guidelines that limit options for mechanically thinning stands to achieve ecosystem restoration and maintenance goals.

Summary

The alternatives were evaluated based on the degree of opportunity to restore and maintain ecosystem structure and composition considering: (1) the approach for achieving an ecosystem structure and composition goal as embodied in the management emphasis; (2) the acreage of projected treatments and expected changes in the amount of wildfire; and (3) the degree of opportunity for active management. Based on these factors, the alternatives that provide the greatest opportunity to restore and maintain ecosystem structure and composition are F4, F7, and S2 because they include a management emphasis of resiliency, they create the most opportunity to use mechanical treatments, and they generally have the greatest percent reduction in annual wildfire acreage. Alternatives with the fewest opportunities to reduce stand density to address forest health are Alternatives F2, F5, F8, and S1 based on their protection management emphasis and fewer acres are available for mechanical treatment. These alternatives also have the lowest change in annual wildfire acreage and some have a projected increase. Alternatives F3 and F6 are in-between these two groupings. They allow for a moderate degree of active management with a restoration management emphasis, and a moderate amount of mechanical treatments. However, alternatives F3 and F6 have a large reduction in percent annual wildfire acreage, largely due to high amounts of prescribed burning. Alternative S1 is grouped in the low category even though the mechanical treatment acreage is closer to the levels of F7 because, as described above, the limitations on the size of trees that can be removed limits its effectiveness to reduce stand density and manage residual stands for desired ecosystem structure and composition.

4.2.3. Restoring Ecosystems after Severe Wildfires and Other Large Catastrophic Disturbance Events

Factors Used to Evaluate the Alternatives

The goal of restoring ecosystems, whether they have become altered slowly over time or due to an extreme, immediate disturbance event, is a goal of all the alternatives. Some alternatives, for example Alternatives F2 and F5, emphasize relying on natural processes to restore disturbed ecosystems. Other alternatives, for example Alternatives F4 and F7, are designed to facilitate active human intervention to restore disturbed ecosystems. For this analysis, alternatives are compared in terms of the relative ability for managers to take steps to restore ecosystems after severe wildfires and other large catastrophic events.

The 2001 FEIS used an approach to compare alternatives that looked at three mechanisms (Volume 1, Chapter 2, p. 70) that in combination can characterize opportunities for restoration after large disturbance events. The relative ability for managers to restore ecosystems after severe wildfires and other large catastrophic events under each alternative can be evaluated by comparing the following three characteristics of each alternative: (1) management emphasis (based on its overall management theme), (2) degree of active management, and (3) degree of local flexibility to respond to local events. Further, several alternatives have standards and guidelines that either facilitate or discourage active management following catastrophic, large scale disturbance events. The values for Table 4.2.3. below are derived from Table 2.4.3a in the 2001 SNFPA FEIS, Volume 1, Chapter 2, p. 70 for alternatives F2 through F8 with comparable values for alternatives S1 and S2 added.

Environmental Consequences

Table 4.2.3. Comparison the Alternatives by Characteristics that Indicate the Degree to which Managers have Opportunities to Implement Restoration Actions Following Large, Severe Disturbance Events.

Characteristic	Alternatives								
	S1	S2	F2	F3	F4	F5	F6	F7	F8
Management Emphasis	protection, restoration	restoration, resiliency	Protection	protection, restoration	resiliency	protection, restoration	restoration	restoration resiliency	protection, restoration
Degree of Active Management	moderate	moderate to high	Low	moderate	high	low to moderate	moderate	moderate to high	moderate
Degree of Local Flexibility	low to moderate	moderate to high	low	moderate to high	high	low	moderate	moderate to high	low to moderate

Management Emphasis. Each alternative has management emphases, which generally includes one or two of the following types of strategies: (1) protection strategies, where large areas are designated as reserves where natural processes shape desired conditions; (2) restoration

strategies, where varying levels of human management are used to create and maintain desired conditions; and (3) resiliency strategies, where a high degree of human management is used to create and maintain ecosystems resilient to severe disturbances. Alternatives that emphasize restoration and resiliency strategies, as opposed to protection strategies, are designed to provide managers with the ability to actively restore ecosystems following severe disturbance events. Table 4.2.3. displays the management emphases for each alternative. Based on this indicator, Alternatives S2, F4, F6, and F7 have management strategies that provide opportunities for managers to take management actions to restore ecosystems following large disturbance events. While Alternatives S1, F3, F5, and F8 include restoration strategies, they also have extensive protection strategies that either prohibit or discourage active management in certain land allocations, many of which in total occupy an extensive proportion of national forest lands in the Sierra Nevada. Hence, opportunities for active restoration under these alternatives are generally limited. In addition, restoration strategies under these alternatives tend to focus on ecosystems that have been altered over time, rather than large, catastrophic events. Alternative F2's reliance on a protection strategy provides minimal opportunities for active restoration following large disturbances.

Active Management. Depending on the management emphasis, the alternatives rely on varying degrees of active human management to achieve desired environmental conditions. Alternatives with higher degrees of active management generally provide managers with a broader array of management tools (as defined by land allocations and management standards and guidelines) to respond to catastrophic disturbance events. The 2004 SNFPA ROD highlighted the opportunities for considering restoration activities following catastrophic disturbances. It stated: "These restoration activities are included in all land allocations and call for managing disturbed areas for long-term fuels profiles, restoring habitat, and recovering the value of some dead and dying trees. Restoration projects can include salvage of dead and dying trees for economic value as well as for fuels reductions. Well-thought-out restoration will keep us on the path of achieving old forest conditions and of re-establishing connectivity between patches of habitat in a proactive manner" (2004 SNFPA ROD, p. 6). As shown in Table 4.2.3., Alternatives S2, F4, and F7 provide moderate to high levels of active management, while Alternatives F2 and F5 provide the lowest degrees of active management. Alternatives S1, F3, F6, and F8 provide moderate levels of active management.

Local Flexibility. The alternatives differ in the degree of flexibility accorded local managers to tailor forest management activities to local environmental conditions. The degree of local flexibility associated with each alternative falls generally into one of three categories: (1) region-wide management direction with prescribed goals and associated methods to achieve goals; (2) region-wide direction that allows managers local discretion to choose among alternative methods; and (3) local discretion for managers to set goals and use methods that respond to local ecological and socioeconomic conditions. Alternatives with higher degrees of local flexibility provide greater options for managers to respond to large, catastrophic disturbance events. As shown in Table 4.2.3., Alternatives S2, F3, F4, F6, and F7 provide moderate to high levels of

local flexibility. Alternatives F2 and F5 provide the lowest degrees of local flexibility, while Alternatives S1 and F8 provide low to moderate levels of local flexibility.

Standards and Guidelines. Alternatives S1 and S2 are the only alternatives with standards and guidelines that provide specific direction for restoration actions following severe wildfires or other catastrophic events. (Alternatives F5, F6, F7, and F8 do however have a standard and guideline aimed at promoting existing hardwood aggregations or stands following stand-replacing events.) Alternative S2 has a set of standards and guidelines directing managers to design restoration projects following large, catastrophic disturbance events (wildfire, drought, insect and disease infestation, windstorm, and other unforeseen events) to meet such objectives as reducing soil erosion and loss of ground cover, protecting and maintaining critical wildlife habitat, and managing the development of fuel profiles over time as well as recover the value of the timber killed or severely injured by the disturbance (2004 SNFPA ROD, Standards and Guidelines # 13 through 17, pp. 52 through 53). This level of flexibility to evaluate each large disturbance, and determine if treatment is appropriate, allows for better consideration of the multiple challenges that apply to these disturbances (e.g. providing for human safety around dead trees; considering landscape levels of early, mid, and late-successional forests and the wildlife habitats these areas provide; and determining if restoration and recovery activities are needed). Alternative S1 has a standard and guideline for old forest emphasis areas and California spotted owl home range core areas that focuses on allowing natural processes to proceed in these areas following severe wildfires and other stand-replacing events by requiring the retention of all snags 15 inches dbh and larger (2001 SNFPA ROD, Appendix A, pp. A-42 and A-44).

Summary

Alternatives F4, F7, and S2 provide the greatest amount of opportunity to use management actions to restore ecosystems following severe wildfires or other large catastrophic disturbance events. Alternative S2 provides specific direction allowing management of ecosystems disturbed after severe wildfires and other large disturbances (2004 SNFPA ROD, pp. 52 through 53). Alternatives F2, F5, F8, and S1 provide the least amount of opportunity to use active management to restore ecosystems following large disturbance events. Alternative S1 specifically limits post-fire salvage across old forest emphasis areas (2001 SNFPA ROD, Appendix A, p. A42). Alternatives F3 and F6 fall in-between these two groupings in terms of providing opportunities for managers to actively restore ecosystems affected by large, catastrophic disturbances. While the opportunities to take management action vary in each alternative, decisions to implement actions are made only after considering the site-specific and landscape context of the particular disturbance event, including the benefits and consequences of leaving disturbed areas untreated.

4.3. Environmental Consequences for Alternatives F2 through F8

The 2004 SEIS summarizes the environmental consequences for Alternatives F2 through F8 in Chapter 4, Part 4.5 "Environmental Consequences for Alternatives F2 through F8" (Volume 1, pp. 328 through 333). This part of the 2004 Final SEIS was reviewed in light of the updated modeling results presented in Section 4.1. of this SEIS as well as the assessments presented in Section 4.2. "Forest Health and Ecosystem Restoration Objectives" above. Based on this review, the first paragraph of each alternative's section needs to be updated; the remaining four paragraphs under each alternative heading remain unchanged. The updated paragraph for each alternative is provided below.

Alternative F2: Establish large reserves where management activities are very limited.

With a management emphasis of protection and a low degree of active management and local flexibility, Alternative F2 treats annually (first decade) approximately 8,000 acres mechanically and 21,000 acres by prescribed burning, about 30 percent of the total effective acreage treated under Alternative S1 (approximately 51,000 acres of mechanical and 50,000 acres of prescribed burning). There is no strategic approach to fuel treatments; fuels treatments are conducted primarily to protect communities and reserves, relying mostly on suppression. The reduced use of prescribed burning from S1 would limit the possibility of escaped fires and air quality impacts. The limited amount of fuel treatments would result in the greatest number of acres burned annually at lethal levels by wildfire, an 11 percent increase in annual wildfire acres from the first to fifth decade (confidence is low that treatments would reduce wildfire extent and severity).

Alternative F3: Actively manage to restore ecosystems. Use local analysis and collaboration.

The management emphasis of protection and restoration, a moderate degree of active management, and a moderate to high degree of local flexibility for Alternative F3 would result in about 25,000 acres treated mechanically and about 63,000 acres treated by prescribed fire annually in the first decade, about 13,000 fewer acres than effectively treated in Alternative S1. The fuels strategy would be determined on a watershed rather than a larger landscape scale, and would increase the use of prescribed fire, emphasizing fuels reductions in areas of high fire hazard and risk, focused in urban wildland intermix zones. Uncertainties exist about the effectiveness of treatments in altering wildfire extent and severity (confidence is low). The use of prescribed fire is higher than the level projected under Alternative S1, including the attendant risk of escaped fire and concerns about adverse air quality impacts due to smoke from prescribed fire. The extent of fuels treatments would reduce the number of acres burned annually by wildfire, a 23 percent decrease in annual wildfire acres from the first to fifth decade.

Alternative F4: Develop ecosystems that are resilient to large-scale, severe disturbances.

With a management emphasis of maintenance and resiliency and a high degree of active management and local flexibility, Alternative F4 would treat annually about 84,000 acres mechanically and about 51,000 acres by prescribed burning, about 134 percent of the total effective acres treated in Alternative S1. Following landscape analysis, the fire and fuels treatment strategy emphasizes strategically placed area treatments and defensible fuel profile zones. The use of prescribed fire is nearly of the same as Alternative S1, with similar risk of escaped fire and concerns about adverse air quality impacts due to smoke from prescribed fire. The extensive amount of fuels treatment would reduce the number of acres burned annually at lethal levels by wildfire, a 25 percent decrease in wildfire acres from the first to fifth decade (confidence is high). Because treatments used to achieve management goals would be determined locally, the risk exists that the diversity of management actions employed would not lead to desired conditions.

Alternative F5: Preserve existing undisturbed areas and restore others to achieve ecological goals. Limit impacts from active management through range-wide management standards and guidelines.

Alternative F5's management emphasis is protection and restoration, with a low to moderate degree of active management and a low degree of local flexibility. Annual mechanical and prescribed burning treatments would be about 11,000 acres and 46,000 acres, respectively, about 56 percent of the total effective acres treated in Alternative S1. The priority of the fire and fuels treatment strategy is to reduce hazard in the urban wildland intermix zone; the treatment emphasis is prescribed fire with some mechanical treatment. The increased use of prescribed fire (about 92 percent of the amount of acres of Alternative S1) and would have similar risk of escaped fire and concerns about adverse air quality impacts due to smoke from prescribed fire. Annual wildfire acres from the first to fifth decade are projected to increase by 3 percent because of the lack of strategic placement of fuels treatments (confidence is low that treatments would reduce wildfire extent and intensity). Confidence is low that there would be no adverse effect on old forest habitats because of the increased losses to wildfire.

Alternative F6: Integrate desired conditions for old forest and hardwood ecosystems with fire and fuels management goals. Reintroduce fire into Sierra Nevada forest ecosystems.

With a management emphasis of restoration, and a moderate degree of active management and local flexibility, Alternative F6 would treat annually about 31,000 acres mechanically and about 73,000 acres by prescribed burning, nearly the same total of effective acres treated in Alternative S1. The fire and fuels treatment strategy emphasizes strategically placed area treatments; landscape-scale structural requirements allow fuel treatments to be fully implemented. With approximately 23,000 more acres of prescribed burning than Alternative S1, there is a higher risk of escaped fire and concerns about adverse air quality and scenic quality impacts due to

smoke from prescribed fire. The extensive amount of fuels treatment would reduce the number of acres burned annually at lethal levels by wildfire, with a 22 percent decrease in wildfire acres from the first to fifth decade (confidence is high). However, there is the uncertainty and risk that focal ecosystems and species are at greater risk from fire and fuel treatments than they are from degradation by high severity wildfire.

Alternative F7: Actively manage entire landscapes to establish and maintain a mosaic of forest conditions approximating patterns expected under natural conditions.

With a management emphasis of restoration and resiliency, and a moderate to high degree of active management and local flexibility, Alternative F7 would treat annually about 67,000 acres mechanically and about 45,000 acres by prescribed burning, about 11,000 more acres than effective acres treated in Alternative S1. Using landscape analysis, the fire and fuels treatment strategy emphasizes high hazard and risk areas and generally strategically placed area treatments. The increased use of prescribed fire (about 5,000 more acres than Alternative S1) increases the risk of escaped fire and concerns about adverse air quality impacts due to smoke from prescribed fire. The extensive amount of fuels treatment would reduce the number of acres burned annually at lethal levels by wildfire, with a 19 percent decrease in wildfire acres from the first to fifth decade (confidence is high). The greatest risk associated with this alternative is not achieving desired conditions across the landscape. A low degree of confidence exists that there would be no adverse effect on old forest habitats because of the concern that extensive reliance on mechanical treatment would damage resource values.

Alternative F8: Manage sensitive wildlife habitat cautiously. Develop new information to reduce uncertainty about the effects of management on sensitive species.

The management emphasis of protection and restoration, a moderate degree of active management, and a low to moderate degree of local flexibility for Alternative F8 would result in about 16,000 acres treated mechanically and about 61,000 acres treated by prescribed fire annually in the first decade, about the 23,000 fewer effective acres treated than in Alternative S1. The fuels strategy is strategically placed area treatments, with limited use of mechanical treatments. Stand-level standards for retention of old forest structure may not allow fuels treatments to be fully implemented. The increased use of prescribed fire (about 11,000 more acres than Alternative S1) increases the risk of escaped fire and concerns about adverse air quality impacts due to smoke from prescribed fire. The extent of fuel treatments would reduce the number of acres burned annually at lethal levels by wildfire, a 7 percent decrease in annual wildfire acres from the first to fifth decade (confidence is moderate that treatments would reduce wildfire extent and intensity). There is a higher short-term risk of high severity wildfire while waiting for the results of studies before implementing fuel reduction. A moderate to high degree of confidence exists that there would be minimal adverse effect on old forest habitats from mechanical treatments due to the cautious approach of this alternative.

List of Preparers

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Experience: Dr. Ahuja is currently a Province Air Quality Specialist for the Forest Service's air quality management program for the eight northern national forests in California. He has worked for the Forest Service for 29 years in the Southwest and Pacific Southwest Region in various positions. He has Air Quality Certification from University of California (Extension), and is the author of various Forest Service technical documents and papers.

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Experience: Mr. Barber has 43 years of work experience with the Forest Service as District Timber Management Officer, Timber Planner, Forest Land Use Planner, Regional Biometrician, and presently Regional Operational Research and Management Science specialist. He has worked on numerous special projects, including Redwood Park Expansion, Decision Support Institute, Gang-of-Four Spotted Owl-Fisheries Analysis, FEMAT, and Cal Owl and both the 2001 and 2004 Sierra Nevada Forest Plan Amendment Project. He is the co-developer of CIA, ELMO, RELM, and FASST computer applications and models. Mr. Barber is a Registered Professional Forester with the State of California (License No. 188). Mr. Barber was the Regional Analyst for the Pacific Southwest Region before retiring in December 2010.

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Nevada Forest Plan Amendment litigation and has assisted with the preparation of the SEIS.

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Education: B.S. in Forestry from the University of California, Berkeley.

Experience: Ms. Perrot has over 20 years of work experience with the Forest Service as a National Environmental Policy Act (NEPA) specialist. She was a member of the interdisciplinary teams for both the 2001 and 2004 Sierra Nevada Forest Plan Amendment Projects, and served as the writer/editor for the 2001 Draft and Final Environmental Impact Statements as well as the 2004 Draft Supplemental Environmental Impact Statement. In addition, she worked for 10 years as a District Environmental Coordinator on the Plumas National Forest and is currently the Forest Environmental Coordinator for the Tahoe National Forest.

Joe Sherlock—Silviculturist

Education: B.S. in Forest Resource Management from Southern Illinois University.

Experience: Mr. Sherlock has over 35 years of experience as a forester. He started in 1977 working on the Jonesboro and Murphysboro Ranger Districts of the Shawnee National Forest in Illinois and then worked briefly for the USDI Bureau

of Land Management. From 1979 to 2004, he worked on the Mi-Wok Ranger District of the Stanislaus National Forest, responsible for silvicultural activities and program management. In 2003 and 2004, he served on the interdisciplinary team for the 2004 Sierra Nevada Forest Plan Amendment Supplemental Environmental Impact Statement. From 2004 he served as the Pacific Southwest Region Assistant Regional Silviculturist, becoming the Regional Silviculturist in 2012. He is the silviculturist on the Regional Strategic Decision Support Cadre. He gained Certification as a Silviculturist in 1983 and became a Regional Forester Representative for Silviculturist Certification Program in 1990. He has been a member of the Society of American Foresters since 1974.

Craig Snider—NEPA Coordinator

Education: B.S. in Forestry from University of California, Berkeley.

Experience: Mr. Snider has 35 years of experience in the Forest Service. He became a certified silviculturist in 1984 and has been an environmental coordinator since 1994. He currently serves as the NEPA coordinator in the regional office of the Pacific Southwest Region.

Andy Taylor—Forest Analyst (Retired)

Education: B.S. and M.S. in Forest Management from Michigan State University.

Experience: Mr. Taylor served as the Forest Analyst for the Mendocino National Forest for over 25 years. He was also the Forest Geographic Information Systems (GIS) Coordinator for over 10 years. Mr. Taylor has served on regional level interdisciplinary teams for the California Spotted Owl Environmental Impact Statement as well as the 2001 Sierra Nevada Forest Plan Amendment Draft and Final Environmental Impact Statements and the 2004 Supplemental Draft and Final Environmental Impact Statements. Mr. Taylor was an Operations Research Analyst with the Pacific Southwest Region's Strategic Decision Support Cadre before retiring in February 2012.

Kenneth A. Wright—Forest Analyst (Retired)

Education: B.S. in Forest Science, M.S. Watershed Management Humboldt State University.

Experience: Mr. Wright has 29 years of experience with the Forest Service as Planning Hydrologist, District Soils Scientist/Hydrologist, Forest Planner, Forest Analyst and was the Hydrologist and Operational Research Analyst at the Regional Office (2004 to 2013). He has worked as an analyst/hydrologist for the Six Rivers National Forest Plan, Northwest Forest Plan, California Spotted Owl Plan, the Herger-Feinstein Quincy Library Group Environmental Impact Statement, and the Pacific Southwest Region's Stewardship and Fireshed Assessment Cadre. Mr. Wright retired in June 2013.

Don Yasuda—Wildlife Biologist, IDT Leader

Education: B.S. in Wildlife and Fisheries Biology from the University of California, Davis.

Experience: Mr. Yasuda has 25 years of experience as a Wildlife Biologist with the Forest Service. He worked from 1988 to 2002 as the District Wildlife Biologist and Assistant Resource Officer on the Pacific Ranger District of the Eldorado National Forest. Between 2002 and 2004, he served as a member of the interdisciplinary team for the 2004 Sierra Nevada Forest Plan Supplemental Environmental Impact Statement. From 2004 to 2009, he has been engaged with addressing regional scale wildlife issues related to regional planning and as the team lead and wildlife biologist on the Regional Strategic Decision Support Cadre. In 2010, he became the Regional Analyst for the Pacific Southwest Region. He is a Certified Wildlife Biologist with The Wildlife Society since 2000 and is the chair of the California Biodiversity Council's Interagency Alignment Team (2013 to present).

Distribution of the Final Supplemental Environmental Impact Statement

This environmental impact statement has been distributed to individuals who specifically requested a copy. In addition, copies have been sent to the following Federal and State elected officials, Federal agencies, federally recognized tribes, State and local governments, organizations, and individuals:

Federally Elected Officials

U.S. Senate

Barbara Boxer (CA)
Dianne Feinstein (CA)
Harry Reid (NV)
Dean Heller (NV)
U.S. House of Representatives
California Districts 2, 3, 4, 19, 21, 22, 25
Nevada District 2

State Elected Officials

California Senate Districts 1, 4, 12, 14, 18
California Assembly Districts 2, 3, 4, 10, 25,
19, 32, 34
Nevada Senate Districts 2, 3, Capitol, Central NV
Nevada Assembly Districts 26, 32, 36, 38, 39

Federal Agencies

Advisory Council on Historic Preservation
Federal Aviation Administration
Federal Highway Administration
National Marine Fisheries Service
Rural Utilities Service
US Army Engineer Division
US Coast Guard
US Department of Energy
US Environmental Protection Agency
USDA APHIS PPD/EAD
USDA National Agricultural Library
USDA Natural Resources Conservation Service
USDA Pacific Southwest Research Station
USDI Bureau of Indian Affairs
USDI Bureau of Land Management

USDI Fish and Wildlife Service
USDI National Park Service

Tribal Government and Organizations

Alturas Rancheria
American Indian Center of Central California
American Indian Council of Mariposa County
Big Pine Paiute Tribe
Big Sandy Rancheria
Bishop Reservation
Blue Lake Rancheria
Buena Vista Rancheria
California Indian Basketweavers Association
California Indian Forest and Fire Management
Council
California Indian Lands Office
Calaveras Band of MiWuk Indians
California Valley Miwok Tribe
Cedarville Rancheria
Central Sierra Me-Wuk Cultural and Historic
Preservation Committee
Chicken Ranch Rancheria
Choinumni Tribe
Cold Springs Rancheria
Colfax Todd's-Valley Consolidated Tribes
Dumna Tribe
Dunlap Band of Mono Indians
El Dorado County Indian Council
Enterprise Rancheria
Fallon Paiute-Shoshone Tribes
Fort Bidwell Reservation
Fort Independence Paiute Tribes
Fort McDermitt Paiute-Shoshone Tribes
Greenville Rancheria
Haslett Basin Traditional Committee
Ione Band of MiWuk Indians
Jackson Rancheria
Kern River Paiute Council
Kern Valley Indian Community
Klamath Tribes
KonKow Valley Band of Maidu
Lone Pine Paiute-Shoshone Reservation
Lovelock Paiute Tribe
Mechoopda Indian Tribe of the Chico Rancheria
Miwok Tribe of the El Dorado Rancheria
Mono Lake Indian Community
Mono Nation
Mooretown Rancheria

North Fork Rancheria of Mono Indians
 Picayune Rancheria of Chukchansi Indians
 Pit River Tribal Council
 Pyramid Lake Paiute Tribal Council
 Redding Rancheria
 Reno Sparks Indian Colony Tribal Council
 Shingle Springs Rancheria
 Sierra Native American Council
 Sierra Nevada Native American Coalition
 Susanville Indian Rancheria
 Table Mountain Rancheria
 Timbisha Shoshone Tribe
 Tule River Indian Tribe
 Tuolumne Band of Me-Wuk Indians
 Tyme Maidu Tribe - Berry Creek Rancheria
 United Auburn Indian Community
 United Maidu Nation
 Utu Utu Gwaitu Paiute Tribe - Benton Paiute Rsvn
 Walker River Paiute Tribe
 Washoe Tribe of Nevada and California
 Wukchumni Nation
 Yerington Paiute Tribal Council

California State Agencies

California Air Resources Board
 California Board of Forestry
 California Conservation Corps
 California Department of Fish & Game
 California Department of Food and Agriculture
 California Department of Forestry and Fire
 California Department of Parks and Recreation
 California Department of Parks and Recreation,
 OHV Division
 California Department of Transportation
 California Energy Commission
 California Environmental Protection Agency
 California Fish and Game Commission
 California Public Utilities Commission
 California Regional Water Quality Control Boards
 California Natural Resources Agency
 California State Association of Counties
 California State Water Resources Control Board
 CALFED Bay Delta Program
 Nevada Department of Wildlife
 Nevada Division of Environmental Protection
 Nevada Division of Forestry
 Nevada Division of State Parks

County/Local Government

Alpine County Board of Supervisors
 Amador County Board of Supervisors
 Butte County Board of Supervisors
 Calaveras County Board of Supervisors
 Carson City Board of Supervisors

Douglas County Board of Commissioners
 East Bay Municipal Utility District
 El Dorado County Board of Supervisors
 Esmeralda County Board of Commissioners
 Fresno County Board of Supervisors
 Inyo County Board of Supervisors
 Kern County Board of Supervisors
 Lahontan Water Quality Central Board
 Lassen County Board of Supervisors
 Lassen County Fire Safe Council
 Los Angeles Department of Water and Power
 Lyon County Board of Commissioners
 Madera County Board of Supervisors
 Mariposa County Board of Supervisors
 Mineral County Board of Commissioners
 Modoc County Board of Supervisors
 Mono County Board of Supervisors
 Nevada County Board of Supervisors
 North Coast Regional Water Board
 North Sierra Air Quality Management District
 Placer County Board of Supervisors
 Plumas County Board of Supervisors
 Regional Council of Rural Counties
 Ridgecrest Chamber of Commerce
 Sacramento Municipal Utility District
 Shasta County Board of Supervisors
 Sierra County Board of Supervisors
 Tahoe Regional Planning Agency
 Tehema County Board of Supervisors
 Truckee Meadows Regional Planning Agency
 Tulare County Board of Supervisors
 Tuolumne County Board of Supervisors
 Washoe County Board of Commissioners

Organizations

American Land Conservancy
 Associated California Loggers
 Blue Ribbon Coalition
 California Association of 4Wheel Drive Clubs
 California Cattlemen's Association
 California Farm Bureau Federation
 California Forestry Association
 California Native Plant Society
 California Off-Road Vehicle Association
 California State Association of Counties
 California Trout, Inc.
 California Wilderness Coalition
 California Wool Growers Association
 Center for Biological Diversity
 Central Sierra Environmental Resources Center
 Defenders of Wildlife
 Forest Issues Group
 Friends of the River
 John Muir Project
 League to Save Lake Tahoe

National Audubon Society
National Forest Homeowners
National Wildlife Federation
Natural Resources Defense Council
Pacific Rivers Council
Points Reyes Bird Observatory
Quincy Library Group
Rocky Mountain Elk Foundation
Sequoia Forestkeeper
Sierra Business Council
Sierra Club
Sierra Club - Mother Lode Chapter
Sierra Club - Tehipite Chapter
Sierra Forest Legacy
Sierra Forest Products
Sierra Institute for Community and Environment
Sierra Pacific Industries
The Institute of Bird Populations
The Wilderness Society
Trust for Public Lands

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Nathan Graveline
Miss Kyra
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Niki Nicholes
Gwen Nitta
William Riggs
Richard Rypinski
Kurt Sorensen
Frank Stewart

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Appendix A: Responses to Comments Received

A Draft Supplemental Environmental Impact Statement (DSEIS) for the Sierra Nevada Forest Plan Amendment was released for public comment during a 45-day comment period, beginning on February 19, 2010. On March 19, 2010, the comment period was extended an additional 30 days through May 5, 2010. The following individuals and organizations provided comments on the 2010 SNFPA DSEIS during the comment period:

Government and Public Agencies (2)

- Magnani, Sally. Supervising Deputy Attorney General for the State of California
- Manzanilla, Enrique. Director of Communities and Ecosystems Division, U.S. Environmental Protection Agency (EPA)

Organizations (4)

- Britting, Susan. On behalf of Sierra Forest Legacy (SFL), The Wilderness Society, Sierra Club, Center for Biological Diversity, and Natural Resources Defense Council
- Hanson, Chad, on behalf of The John Muir Project (JMP)
- Stewart, Frank, on behalf of Lassen, Plumas, Shasta, Sierra, Tehama Counties
- Voss, Rene, on behalf of Sequoia ForestKeeper (SFK)

Individuals (5)

- Alderson, George
- Baughman, Doug
- Lenmark, Jolene
- Morningstar, Paul
- Rugg, William R.

- Denny, Robert
- Doddy, Ruth
- Dressler, Pat
- Eagle, Kathy
- Eagle-Gibbs, Ashley
- Festa, Robert
- Fiipelli, Deborah *
- Fogarty, Dan
- George, David
- Guillentine, Ron
- Haulman, Alex
- Hiestand, Nancy *
- Jones, Ilze
- Kangas, Richard
- Kean, Virginia
- Kitchen, Michael
- Keowen, Ellen
- McGuire, Mark

Individuals – Form Letter (37)

- Anderson, Terry
- Barbour, Philip
- Buckheim, Debbie
- Carhart, Jami
- Cassity, Valerie
- Clapper, Cheryl
- Cremin, Janet *
- Cruz, Marian

- McPhall, Dana
- Nichols, Karen
- Perlman, Robert
- Raffa, Jacqueline
- Roberts, Lois
- Sams, Gloria
- Seal, Kathy
- Unger, Arthur
- Westbrook, Janet
- Williams, Joseph and Diane *
- Yeager, Will

*= minor personalization to form letter

This appendix provides the Forest Service's responses to comments received on the 2010 SNFPA DSEIS. Table 1 below identifies the general topics raised in the comments and provides their page locations within this appendix.

Table A.1. Comment Topics Received on the 2010 SNFPA DSEIS

Comment Topics	Located on Page(s):
A. Range of Alternatives	55 – 59
B. Effects Analysis	59 – 67
C. Alternative Preferences	67
D. Forest Plan Revision	67
E. Extension of Comment Period	67 – 68

A. RANGE OF ALTERNATIVES

Comment #1a: *The 2010 SNFPA DSEIS fails to develop new alternatives to address the new objectives presented in the 2004 SNFPA FSEIS. Rather than actually developing a range of alternatives to address the new objectives presented in 2004, the information presented in the 2010 DSEIS simply restates old alternatives. (SFL, California State Attorney General)*

Comment #1b: *The 2001 alternatives were never developed for these new and additional objectives, and it is not appropriate to use these 2001 alternatives in either the 2004 analysis or in the new analysis for the 2010 DSEIS. This is a fundamental flaw that cannot be cured by simply amending the 2001 or 2004 forest plans, and must be abandoned now and in the future. (SFK)*

Comment #1c: *The draft omits alternatives that should be considered before this goes to a final decision. As written, it may not meet the legal test of a reasonable range of alternatives. (Alderson)*

Comment # 1d: *Simply remodeling the alternatives from the 2001 environmental analysis without considering the latest science on fuel reduction with the least impact to the forest does not cure the legal defects. The alternatives carried forward were meant for the 2001 Forest Plans and are not alternatives to the 2004 management goals and the additional logging it mandated. None of the alternatives from the 2001 analysis were developed to address the purported purposes of the 2004 forest plan amendments... the Forest Service should go back to using the 2001 Forest Plan as a basis and analyze alternatives that would use the latest science to significantly reduce logging on the Sierra Nevada national forests and protect old growth habitats and dependent species rather than supplying trees to the sawmill. (Form Letter received from 37 individuals)*

Response: In 2009, the Ninth Circuit Court of Appeals concluded, in the context of a preliminary injunction ruling, that the plaintiffs were likely to succeed on the merits of their NEPA claim that the 2004 SEIS violated NEPA due to a failure to improperly consider alternatives (Sierra Forest Legacy v. [Rey](#), 577 F.3d 1015 (9th Cir. 2009)). The court reached this conclusion because “USFS failed to

account for its changed modeling techniques in the alternatives it considered” and “the 2004 SEIS introduced substantively new objectives from those contained within the 2001 FEIS.” These “new objectives” included “reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events.” When the District Court for the Eastern District of California ruled on the merits of plaintiffs’ claims in August 2008, the District Court held that the 2004 SEIS’s analysis of alternatives was inadequate, citing a May 2008 ruling by the Ninth Circuit, which was later superseded by the Ninth Circuit’s 2009 ruling. In ruling on the merits, the District Court stated: “because the Forest Service altered its modeling techniques between the issuance of the 2001 FEIS and the 2004 SEIS but failed to update its analysis of the 2001 FEIS alternatives to reflect these new techniques, changed circumstances [are] present that render[] improper any reliance by the 2004 Framework on its 2001 predecessor.” The District Court did not address the issue of the “new objectives” in its summary judgment ruling. Finally, on April 15, 2013, the District Court reiterated the legal flaws in the 2004 SEIS and ordered the Forest Service to prepare a supplemental EIS to remedy those legal violations. In describing the NEPA violation, the District Court characterized the Forest Service’s error as one related to the “analysis” and “comparison” of alternatives in the 2001 and 2004 EISs.²⁴ The District Court, again, did not raise the issue of the “new objectives” cited by the Ninth Circuit in its preliminary injunction ruling. In order to remedy the NEPA violation, the District Court issued the following order: “The Court orders the Forest Service to complete a supplemental EIS that addresses the range of alternatives deficiency identified by the Court in its summary judgment opinion. ... The final supplemental EIS should be issued by August 30, 2013.”

While the path leading to the current SEIS has been long and convoluted, some key points can be drawn from the court rulings summarized above. First, none of the court rulings suggested or held that the Forest Service needed to generate new alternatives based on the “new objectives” identified in the Ninth Circuit’s ruling. Rather, the court rulings fault the Forest Service’s “analysis” and “comparison” of existing alternatives in the 2001 and 2004 EISs. Second, the Court Order that required the preparation of this SEIS is the April 2013 order from the Eastern District of California. Neither that ruling nor the District Court’s 2008 summary judgment ruling to which the April 2013 ruling refers identifies the “new objectives” issue as a distinct legal flaw that requires supplemental analysis, much less development of new alternatives. Rather, the District Court’s summary judgment ruling was premised on the Forest Service’s failure to update its analysis of alternatives based on the new modeling techniques used by the 2004 SEIS. While the Ninth Circuit ruling indicated that the “new objectives” issue was important in the preliminary injunction context, the Ninth Circuit was careful to limit its ruling to that context.²⁵ Finally, to the extent the Ninth Circuit’s preliminary injunction is relevant to the scope of this SEIS – and the agency has prepared the SEIS with thorough consideration and full weight given to the Ninth Circuit’s ruling – the Ninth Circuit’s opinion only stated that the agency “must account for [the new objectives] in the alternatives it considers.”²⁶ As discussed in the body of the SEIS and below, the Forest Service fully accounted for the new objectives by: 1) considering whether those new objectives warranted the development of new alternatives, and 2) evaluating each of the alternatives in the 2001 and 2004 EISs with regard to the new objectives.

²⁴ See, e.g., *Sierra Forest Legacy v. Sherman*, 2:05-CV00205-MCE-GGH, 2013 WL 1627894 (E.D. Cal. Apr. 15, 2013): (“The inadequacy found in the SEIS pertained to the *analysis* of alternatives under NEPA.”); (“the narrow NEPA deficiency identified by the Court; namely, Defendants’ failure to properly *analyze* project alternatives.”); (“The [legal] error identified relates to the *comparisons* of the 2004 Framework to the non-selected alternatives from the 2001 EIS ...”).

²⁵ See *Sierra Forest Legacy v. Rev.*, 577 F.3d 1019 (9th Cir. 2009) (“the district court’s summary judgment order is not before us, and we address here only the previously denied preliminary injunction.”).

²⁶ *Id.* at 1022

As to the first point, the Forest Service has considered whether the “new objectives” described in the 2004 Framework ROD require the development of alternatives above and beyond those analyzed in the 2001 and 2004 EISs.²⁷ The agency has determined that the development of new alternatives is not warranted. This is the case for two reasons. First, the “new objectives” identified by the Ninth Circuit -- reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events were identified as “other management objectives” in the context of the responsible official explaining the decision in the Record of Decision.²⁸ Read in context, these management objectives were not intended to amend the Purpose and Need for the 2004 Framework; rather, the objectives simply identified a broader scope of land management opportunities that could be accomplished through S2’s more aggressive approach to forest thinning and fire hazard reduction. Since the Purpose and Need does not include the “new objectives,” new alternatives based on those objectives are not necessary. Second, despite the “new objectives” not being explicit elements of the Purpose and Need, those objectives are addressed by several of the alternatives set forth in the 2001 and 2004 EISs. Therefore, the agency did not need to develop new alternatives to account for these objectives. Each of these reasons is addressed in greater detail below.

Both the 2001 and 2004 SNFPA EISs were drafted to amend the forest plans for the 11 Sierra Nevada national forests to provide consistent management direction for addressing five key problem areas: old forest ecosystems and associated species; aquatic, riparian, and meadow ecosystems and associated species; fire and fuels management; noxious weeds; and lower westside hardwood forest ecosystems. These five problem areas were the basis for the Purpose and Need of both the 2001 and 2004 EISs. *See* 2001 FEIS, Volume 1, Chapter 1, pp. 1, 4 through 7; 2004 FSEIS, Volume 1, pp. 2, 26 through 29. The range of alternatives developed for the 2001 FEIS and 2004 SEIS were designed to meet the purpose and need for the proposed plan amendments while addressing significant issues associated with the proposed amendments. The “new objectives” referenced in the Ninth Circuit Court of Appeals ruling (*Sierra Forest Legacy v. Rey*, 577 F.3d 1015 (9th Cir. 2009)) were not a fundamental component of the purpose and need for either the 2001 SNFPA proposed plan amendments (2001 FEIS, Volume 1, Chapter 1, pp. 4 through 7) or the 2004 SNFPA proposed plan amendments (2004 SEIS, Volume 1, pp. 26 through 29). Because the Purpose and Need provides the basis for the range of alternatives and the new objectives did not amend the Purpose and Need, additional alternatives did not need to be developed based on the objectives.

Even though the “new objectives” identified by the Ninth Circuit did not alter the Purpose and Need, when the 2001 SNFPA EIS was drafted and the range of alternatives created, the Forest Service developed a wide range of alternatives, several of which included the “new objectives” as key features of the management strategies proposed by those alternatives, including Alternative 4 (2001 FEIS, Volume 1, Chapter 2, p. 104) and Alternative 7 (2001 FEIS, Volume 1, Chapter 2, p. 144). And, to the extent other alternatives were not specifically designed to address these objectives, the alternatives still covered a broad spectrum of management approaches that provided for the accomplishment of these objectives (with varying degrees of success). Therefore, the original range of alternatives in the 2001 FEIS accounted for these objectives and covered a sufficiently broad spectrum of management strategies such that it was not necessary to develop additional alternatives to address these objectives.

²⁷ As to the second point – the evaluation of existing alternatives in light of the new objectives – that is accomplished by the SEIS itself. *See* SEIS at pages 23-36.

²⁸ “This decision replaces the standards and guidelines of the SNFPA 2001 ROD to ensure that fuels treatments will effectively modify wildland fire behavior. In addition, the basic strategy is broadened to include other management objectives such as reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events.” 2004 SNFPA ROD at page 4.

Finally, as to the comment that new alternatives should have been developed in response to the latest scientific information, it is helpful to understand the context of this 2013 SEIS. Even though this SEIS relates to the management of millions of acres on eleven National Forests, the SEIS's purpose is quite narrow and not meant to supplant the more comprehensive forest planning efforts that are in progress for all the National Forests in California, including the Forests covered by the Sierra Nevada Framework. Pursuant to the 2012 forest planning rule, the Forest Service is currently in the process of preparing comprehensive Forest Plan revisions, which will be based on all the latest science. That Forest Plan revision process is the most appropriate place to grapple with the scientific and management information that has developed since the adoption of the 2001 and 2004 Frameworks. To have this SEIS, which is being prepared in response to a narrow court injunction, develop a suite of new alternatives based on all the latest science would not only be beyond the scope of what the court has asked for, but it would also be impractical in the short time allotted for this SEIS and duplicative in light of the ongoing Forest Plan revision process.

Comment #2: *None of the alternatives identified in the 2010 DSEIS are designed to reduce in a significant way the bioregional concern about forest health that was identified in the 2004 SEIS. New alternatives should have been developed to address this issue. (SFL)*

Response: The purpose of the 2013 SEIS is to remedy the NEPA flaws addressed in the order issued by the Eastern District Court of California on April 15, 2013. As described in the response to Comment #1 above, the Forest Service considered whether the “new objectives” described in the 2004 SNFPA ROD require the development of alternatives above and beyond those analyzed in the 2001 and 2004 SNFPA EISs.²⁹ The agency determined that developing new alternatives is not warranted because the “new objectives” (including reducing stand density for forest health) were not part of the Purpose and Need for either the 2001 or 2004 EISs. In addition, the range of alternatives considered in the 2001 and 2004 SNFPA EISs included strategies aimed at addressing this objective (*See* response to Comment #1 above). The SNFPA addressed five broad “problem areas” listed in Section 1.2. (2013 Final SEIS, p. 2). Section 1.4 states that the underlying need for this SEIS remains the same as was described in the 2001 FEIS and 2004 SEIS (2013 Final SEIS, p. 3). However, opportunities for accomplishing the objective of reducing stand density for forest health under each of the nine alternatives (Alternatives F2 through F8 and S1 and S2) is evaluated in the 2013 Final SEIS in Section 4.2.1.

Comment #3: *The 2010 SNFPA DSEIS fails to develop alternatives to address another new objective from 2004, specifically obtaining funding to support fuels management activities. (SFL, California State Attorney General)*

Response: See the Response to Comment #1 above regarding consideration of “new objectives” in this SEIS. The objectives identified by the Ninth Circuit Court included “reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events.” Obtaining funding to support fuels management activities is not an objective identified by the Court and is therefore beyond the scope of the analysis presented in this SEIS. Further, as described in section 1.4 of the 2013 Final SEIS and as described for Comment #1 above, this objective was not included in the Purpose and Need for the 2001 and 2004 SNFPA EISs. A discussion of the budget requirements for each alternative was provided in the 2001 FEIS in Volume 1, Chapter 2, p. 200 and the 1995 dollar value ranged from \$236.8 million for Alternative F4 to \$144.6 million for Alternative F2. These numbers were not updated in the 2004 SEIS, however, a discussion of the economics of fuels treatments by treatment types was provided in the 2004 SEIS (Volume 1, pp. 222 through 226) along with a discussion of the opportunity to leverage

²⁹ As to the second point – the evaluation of existing alternatives in light of the new objectives – that is accomplished by the SEIS itself. See SEIS at pages 23-36.

appropriated funding to accomplish fuels treatments (Volume 1, p. 50). The discussion shows that in the process of treating forest stands to reduce fuels and improve forest health, the economic benefit of removing a few medium sized trees can dramatically improve the feasibility of accomplishing fuels treatment and restoration projects within existing budgets (2004 SEIS, Volume 1, p. 50).

Comment #4a: *All of the alternatives fully considered by the DEIS involve commercial logging of timber from public lands, and all involve the financial conflicts of interest that come with the Forest Service's sale of timber from public lands and retention of receipts from the sale of timber—both green trees and post-fire salvage logging... Please fully consider a non-commercial alternative (one that would not sell wood products for timber or biomass) with a 12-inch upper diameter limit and no group selection. (JMP)*

Comment #4b: *With urban expansion and rural density increasing, we should abolish all cutting in national, state, and county forests. There are existing companies out there that grow trees and replant in a farming atmosphere that supply our wood products. (Lenmark)*

Comment #4c: *We would like to see an alternative that reflects scientific findings that recommend thinning only of trees 9 inches DBH or less. We urge stressing tree removal in the zone within 200 or 300 feet of houses and structures, where this could be helpful to reduce fire risk. Alternatives should emphasize less logging and more protection of old growth forests. (Alderson, Form Letter received from 37 individuals)*

Response: Certain aspects of the commenters' (Comments # 4a and 4c) suggested alternatives are captured within the range of alternatives considered. Alternative S1 effectively results in a 12-inch (or 6-inch) diameter limit for areas outside Wildland Urban Intermix (WUI) Defense Zones (2004 SEIS, Volume 1, p. 46 and Sierra Nevada Forest Plan Amendment Management Review and Recommendations (2003), p. 44). Further, an alternative that would set a maximum diameter limit on tree removal below 30 inches diameter at breast height (dbh) was considered but not analyzed in detail (2004 SEIS, Volume 1, p. 91). An alternative that expanded the use of prescribed burning in lieu of mechanical restoration was considered but not analyzed in detail in the 2001 FEIS (Volume 1, Chapter 2, p. 184). None of the alternatives provide for group selection across the Sierra Nevada national forests; however, Alternative S2 allows for group selection for national forests within the Herger Feinstein Quincy Library Group Pilot Project Area for the life of the Pilot Project (which ended on September 30, 2012).

The regulated management of timber on the national forests is provided by the National Forest Management Act, the Resource Planning Act, and the Multiple-Use Sustained Yield Act. These Acts and their Forest Service implementing regulations provide direction on identifying areas capable, available, and suitable for timber production and where timber harvest may be a suitable method to achieve other land management objectives. Neither the 2001 nor 2004 SNFPA decisions changed the capable, available, and suitable timber land determination made in the individual forest plans or the associated allowable sale quantity and instead deferred consideration of changes to later forest plan revisions (2001 SNFPA ROD, p. 11 and 2004 SNFPA ROD, p. 9).

B. EFFECTS ANALYSIS:

Comment # 5: *The 2010 Draft SEIS describes the alternatives and their various management strategies...It is difficult to evaluate the benefits and adverse impacts of the different management strategies without knowledge of the scientific basis or proven effectiveness of these strategies. We recommend that the Final SEIS include a chapter describing the benefits and impacts of each management strategy, and summarizing scientific data on the relative effectiveness of each approach in meeting specific management objectives and desired conditions. (U.S. EPA)*

Response: The benefits and impacts of the management strategies under each alternative are disclosed in Chapter 3 of the 2001 FEIS (Volumes 2 and 3) and Chapter 4 of the 2004 SEIS (Volume 1). The 2004 SEIS acknowledges uncertainties inherent in these management strategies (Volume 1, pp. 64 through 88), and the 2004 SNFPA ROD provides for an adaptive management and monitoring strategy to address key uncertainties (ROD, pp. 12 through 13). Similarly, the 2001 FEIS recognizes uncertainties associated with different management strategies and proposes adaptive management and monitoring for the action alternatives (Alternatives F2 through F8) (*See* 2001 FEIS, Volume 1, Chapter 2, pp. 23 through 34 and 50 through 52.).

Comment # 6: *We continue to have objections to the Preferred Alternative S2...Our rating, Environmental Objections – Insufficient Information,...identified avoidable significant environmental impacts to water quality, sensitive habitats, and threatened and endangered species. Our objections also reflect the decision to defer the evaluation of transportation impacts on water quality... We seek assurances that point discharges and landslide sediment inputs from road failures and unmaintained roads will be minimized to the greatest extent feasible. Without sufficient consideration of these transportation impacts and mitigation commitments, we believe the program-level guidance you have sought to improve is incomplete...We realize that a comprehensive transportation system plan would be inconsistent with the scope of the SNFPA. We maintain that program-level guidance regarding decommissioning targets, mitigation strategies that avoid or reduce impacts associated with roads, and forest-wide transportation priorities are appropriately addressed at the programmatic level. (U.S. EPA)*

Response: As noted in this comment, developing a comprehensive transportation system plan is outside of the narrow scope of this SEIS as described in the Purpose and Need (Section 1.4, p. 3). In recent years, the Sierra Nevada national forests have embarked on broad-scale transportation planning through implementing Subpart B of the 2005 Travel Management Rule (36 CFR 212, Subpart B). These efforts have addressed the issue of unmanaged, cross country motor vehicle use through: (1) prohibition of cross country motor vehicle travel by the public; (2) designation of roads, trails and areas by vehicle class, and if appropriate, time of year; and (3) production of a Motor Vehicle Use Map (MVUM). The public is prohibited from possessing or operating a motor vehicle on National Forest System lands other than in accordance with the designations shown on the MVUM. Additionally, forests are in the process of completing the travel analysis process as part of Subpart A of the 2005 Travel Management Rule (36 CFR 212, Subpart A). Finally, under a national Forest Service program called the Watershed Condition Framework, each Region evaluated watershed condition using a multitude of factors including: open road density, road maintenance, proximity of roads to water, mass wasting, and soil erosion (USDA Forest Service 2011). This information was used to guide each forest in identifying priority watersheds and developing watershed restoration action plans. This will guide forests in proposing site-specific restoration projects that may include addressing transportation related impacts to improve watershed condition.

Comment #7: *The 2004 FSEIS presents an analysis of Alternatives S1 and S2 that discloses substantially different information in the comparison of the alternatives related to reducing stand density for forest health than provided in the 2010 DSEIS. (SFL)*

Response: The discussion in this SEIS (Section 4.2.1.) was improved to more clearly explain the analysis approach. The 2004 SEIS evaluated Alternatives S1 and S2 in terms of opportunities for density reduction treatments that could reduce stand density to improve forest health. A table displayed the modeled extent of treatment unit acreage under Alternatives S1 and S2 that could reduce density in moderate to high tree density areas (Table 4.2.2a, 2004 SEIS, p. 202). This was based upon land allocations and the opportunities for mechanical treatments within them for each alternative. Only mechanical treatments were considered because they “would result in removal of more trees that are contributing to density/drought hazards” (2004 SEIS, Vol 1, p. 201). The 2004 SEIS concluded that

Alternative S2 would provide greater opportunities for addressing forest health than Alternative S1 based on more projected mechanical thinning treatments in areas of high stand density (2004 SEIS, Volume 1, p. 203). The 2013 Final SEIS compares total acres of mechanical treatment rather than trying to separate out acreages by different land allocations because the allowable treatments within them varies by alternative. For example, in the old forest land allocation, a similar acreage of projected mechanical thinning treatments under two alternatives could produce substantially different results in terms of meeting forest health objectives, based on each alternative's different standards and guidelines. To better account for this variation, the level of tree removal allowed by the standards and guidelines was considered in combination with the total projected mechanical treatment acreages. The 2013 SEIS evaluates all nine alternatives (S1 and S2 and F2 through F8) in this consistent manner to bring them all to a level playing field in terms of assessing their capability to address a forest health objective.

Comment #8: *The 2010 DSEIS fails to consider and evaluate the feasibility of the options it describes....Specifically, the 2010 DSEIS fails to describe and evaluate such issues as the feasibility of mechanical thinning due to loss of mill capacity and feasibility of conducting prescribed fire treatments due to air quality regulations in detail. This is a gap of enormous proportions. (Rugg)*

Response: The commenter raises issues that have been analyzed in detail in the 2001 FEIS and the 2004 SEIS. Economic impacts associated with timber harvesting and biomass utilization were analyzed in the 2001 FEIS (Volume 2, Chapter 3, pp. 385 through 395 and 516 through 533) and 2004 SEIS (Volume 1, pp. 222 through 226 and 316 through 322). Air quality impacts associated with varying levels of prescribed burning under the alternatives is addressed in the 2001 FEIS (Volume 2, Chapter 3, pp. 323 through 354) and 2004 SEIS (Volume 1, pp. 229 through 232).

The Regional Forester specifically emphasized how his 2004 SNFPA decision was aimed at addressing these issues:

This decision allows local managers to consider the removal of medium-sized trees (less than 30 inches diameter) at the site-specific project level, rather than to implement a uniform fuel hazard reduction prescription for the entire Sierra bioregion. We can make better choices by having the ability to consider crown positions and the numbers of trees within each diameter class and their contribution to ladder and crown fuels in the fuel profile at the project level. ... Expanded use of mechanical treatments can be used to set the stage for prescribed fire as a follow-up treatment, or to deal with those specific situations when we are concerned about smoke or available burn days.

The emphasis in the SNFPA 2001 ROD to focus on removing small fuels, outside the threat and defense zones, effectively precludes most commercial options for removing fuels. The potential supply of raw material for biomass far exceeds regional market demand and is costly to get to market. We're losing the capacity to remove larger diameter fuels. As the timber industry has waned, there have been situations in the west where markets simply were not available to accept the vast quantities of fuel that needed to be removed from the forest to make them resistant to fires and insects. When the predictable flow of wood products is lost, the cost of doing business increases, and wood processing facilities close. The result is that cost-effective marketing options for fuel treatments are also lost... This decision is intended to keep some market options alive and enhance the profitability of removing the small fuels (2004 SNFPA ROD, p. 9).

The issues raised by the commenter have already been analyzed in detail in the 2001 and 2004 SNFPA EISs and are beyond the limited scope of the 2013 SEIS established by the order issued by the Eastern District Court of California on April 15, 2013.

Comment #9: *There is no mention of cultural resources in the Draft SEIS. (Baughman)*

Response: The effects to heritage resources were evaluated in the 2001 FEIS (Volume 2, Chapter 3, Part 5.8 pp. 510 through 515). The 2004 SEIS considered that analysis and concluded that “low levels of impact were projected for all action alternatives” and that “The proposed changes considered in the [2004] SEIS do not alter variables used in that assessment, and no additional analysis is needed” (2004 SEIS, Appendix C, p. 413). In addition, potential effects on cultural resources are analyzed for site-specific actions. The broad programmatic nature of a forest plan amendment, such as the SNFPA, does not specify where and when specific areas would be treated. Direct, indirect, and cumulative effects on cultural resources are analyzed, consistent with the requirements of NEPA, when a site-specific action is proposed.

Comment #10: *The DSEIS, on pp. 23-26, states a goal of reducing forest stand density across the Sierra Nevada, relative to current conditions, ostensibly in order to prevent recruitment of new snags (dead trees) due to competition. The DSEIS describes the prevention of new snag creation as advancing “forest health”, and rates alternatives most positively if they most aggressively reduce future snag levels relative to current levels. However, the DSEIS fails to explain how or why the further reduction of large snags, upon which many wildlife species depend for foraging and nesting, improves the ecological health of the forest. (JMP)*

Response: The 2013 SEIS does not base its analysis of reducing stand density for forest health in terms of preventing snag recruitment, as the commenter suggests. Instead, the SEIS explains that the alternatives can be compared in terms of the level of opportunities they provide for forest managers to take action to reduce the densities of forest stands at risk of mortality due to overcrowding. Two indicators are combined to assess the degree to which each alternative provides opportunities for reducing forest stand density to improve forest health: (1) the amount of projected mechanical thinning acres, (recognizing that thinning allows managers to select specific trees to retain in the residual stand, whereas prescribed fire does not provide this level of control and may kill the desired leave trees) and (2) the degree to which the alternative's standards and guidelines allow managers to sufficiently reduce stand density to address local forest health problems (2013 Final SEIS, Section 4.2.1.). Standards and guidelines for retaining large trees and snags are included in all nine alternatives (S1 and S2 and F2 through F8); changes to these standards and guidelines are beyond the scope of the 2013 SEIS.

Reducing stand density, if done at sufficient intensity, could reduce the rate of tree mortality within treated areas. This could result in a slight reduction of total number of snags as trees in areas of over-dense forests that are treated survive better. However, this is not a significant concern for three reasons. First, mechanical treatment (*See* Table 4.1.4b, 2013 Final SEIS, p. 20) would only affect a fraction of the landscape in all alternatives, leaving large areas at high stand density where snags would continue to be created. Second, while mechanically thinning small and medium sized trees reduces the risk of tree mortality today, it allows the remaining trees to grow larger and thus create larger snags in the future when trees eventually die. These large snags are more valuable to wildlife species because they last longer and can support larger cavities (Ritchie et al. 2013). Third, wildfires continue to burn large areas of forest land, killing trees and creating snags and will continue to do so under all alternatives (*See* Table 4.1.2d, 2013 Final SEIS, p. 18). Snag creation as a result of large severe wildfires comes with a risk that old forest habitats and conditions may be lost if tree mortality is high.

Comment #11: *The DSEIS fails to indicate the current densities of large (over 15 inches in diameter, and especially over 30 inches in diameter) snags in the analysis area. Nor does the DSEIS provide any quantitative estimate of the density of large snags within the analysis area within coming decades after implementation (e.g., 10, 20, 30 years after the proposed 2010 Sierra Nevada Forest Plan Amendment is implemented). (JMP)*

Response: Standards and guidelines for retaining large trees and snags are included in all nine alternatives (S1 and S2 and F2 through F8); changes to these standards and guidelines are beyond the

scope of the 2013 SEIS. Projections of snag levels are provided in the 2001 FEIS (Volume 1, Chapter 3, Part 3.1, pp. 91 through 92) and show an increase in the number of snags for all alternatives. Effects of the nine alternatives on snag retention and recruitment are addressed throughout the 2001 FEIS wildlife analyses (see, for example, Volume 3, Chapter 3, Part 4.4, pp. 8, 11 through 12, 26, 29, and 101) and 2004 SEIS wildlife analyses (see, for example, Volume 1, pp. 248, 255, and 277). The purpose of this SEIS was to apply the updated modeling used in the 2004 SEIS to Alternatives F2 to F8 so that a direct comparison to Alternatives S1 and S2 could be made. Thus it is outside the narrow scope of this analysis to evaluate and report the current densities of large snags. Also see Comment #10 for a discussion on how thinning treatments may affect the rate of snag creation.

Comment #12: *The DSEIS, on pp. 27-34, states a goal of further reducing wildland fire acres, especially areas of moderate- or high-intensity fire, and alternatives are rated positively to the extent that they most aggressively further reduce wildland fire, and high-intensity fire, extent. However, the DSEIS fails to explain how further reducing wildland fire would be good for forest ecosystems of the Sierra Nevada and the native biodiversity in these ecosystems, and utterly fails to analyze the adverse impacts of further reducing wildland fire on the many wildlife species, including many rare and imperiled species, that depend upon post-fire habitat, especially high-intensity fire areas... The stated goal of the DSEIS makes the scientifically inaccurate assumption that less fire is good for Sierra Nevada forest ecosystems, and incorrectly implies that areas of high-intensity fire (patches where most or all trees are killed) are somehow unnatural in Sierra Nevada forests. The science clearly contradicts this assumption. (JMP)*

Response: This comment is referring to the 2013 SEIS analysis of the nine alternatives in terms of the goal of restoring and maintaining ecosystem structure and composition. The 2013 Final SEIS explains that, while all of the alternatives are aimed at achieving this goal, they can be differentiated based on their approaches for achieving it. Each alternative is assessed in terms of: (1) management emphasis (based on its overall management theme); (2) the acreage of projected treatments and projected changes in annual wildfire acreage burned between the first and fifth decade; and (3) the degree to which the alternative provides opportunities for active management to achieve goals for restoring and maintaining ecosystem structure and composition. The change in wildfire acreage burned annually under each alternative is one of the factors used to compare the alternatives; however, it is combined with the other indicators noted above to arrive at an overall assessment of each alternative's capability of achieving ecosystem restoration and maintenance goals (2013 Final SEIS, Section 4.2.2.).

Effects of wildfire under each alternative on Sierra Nevada ecosystems and wildlife species are extensively addressed throughout the 2001 FEIS and 2004 SEIS analyses, with too many citations to reference here. The 2004 SEIS explains in the purpose and need that there is a need to refine direction related to three problem areas identified in the 2001 FEIS (2004 SEIS, Volume 1, Chapter 2, pp. 26 through 29). Two needs are relevant to this comment. The first is related to old forest species and associated species and states that:

California continues to have significant problems with wildland fire and forest health. Decades of fire exclusion have produced overcrowded vegetation in many forests, which has weakened trees and made them more fire prone and more susceptible to pests, diseases, and displacement by invasive species. The number and severity of wildfires continues to increase. Using historic fire data and recent trends, habitat losses are expected to increase on the average. More importantly, these losses are likely to result from significant fire events that cause significant impacts to habitat in a concentrated location instead of averaged over the bioregion. There is a need to reduce expected habitat losses to a rate at least equal to replacement by treating enough acres with enough intensity to significantly modify fire behavior.

The second relevant need is related to Fire and Fuels and states that:

The SNFPA FEIS recognized that wildland fire poses a major threat to life, property, financial resources, and natural resources in the Sierra Nevada. In addition, the continued and rapid growth of the region's human population continues to increase the risk of loss of life and property from wildfires, unless hazards are mitigated. The SNFPA was intended to provide a coordinated strategy for addressing the risk of catastrophic wildfire that resulted from decades of fire suppression and the resulting build-up of hazardous fuels. Specific goals were to

- reduce the wildfire threat to human communities and ecosystems and natural resources,*
- maintain ecosystem functions, and*
- decrease the cost of fire suppression.*

These goals remain valid and must be addressed when making changes to existing management direction.

The 2004 SEIS considers the need to reduce wildfire impacts to communities and undesired wildfire impacts on old forests. As shown in Table 4.1.2d in Chapter 4 of this SEIS, while the acres of annual wildfire is projected to decrease in some alternatives, because they only treat a portion of landscapes, large areas would remain susceptible to severe wildfire effects under all of the alternatives, particularly moderate and high severity wildfire as seen in the years since the 2004 SNFPA decision. These fires will continue to provide habitat for wildlife species that require high severity burned areas. However, as quoted above, the concern remains that many of these fires are burning in old forests, reducing breeding habitat for species such as the fisher and California spotted owl at a rate faster than it can be replaced. Given the narrow scope of the environmental analysis established by the Eastern District Court of California to remedy errors relative to the analysis of alternatives presented in the 2004 SEIS (2013 Final SEIS, Section 1.4.; response to Comment #1 above), further analysis of annual wildfire acreage burned is limited to clarification and elaboration added to section 4.2.2.

Comment #13: *The DSEIS makes the scientifically unsound and inaccurate assumption that a loss of wildlife habitat and ecosystem value is being caused by wildland fires in the Sierra Nevada, and that the forest ecosystems are somehow diminished because such fires occur. In fact, the areas of high-intensity fire resulting from large, intense wildland fires create some of the best, most biodiverse, and most ecologically rich wildlife habitat, according to the current science (Bock and Lynch 1970, Hutto 2006, Noss et al. 2006, Hanson and North 2008, Swanson et al. 2010, USDA 2010). (JMP)*

Response: Analyzing new effects of wildland fire on wildlife habitat and ecosystem values is beyond the scope of the environmental analysis in the 2013 SEIS. The scope of the SEIS is based on an order issued by the Eastern District Court of California to remedy errors relative to the analysis of alternatives presented in the 2004 SEIS (2013 Final SEIS, Section 1.4.; response to Comment #1 above). Effects of wildfire under each alternative on Sierra Nevada ecosystems and wildlife species are extensively addressed throughout the 2001 FEIS and 2004 SEIS analyses, with too many citations to reference here. The Land and Resource Management Plans for the national forests in the Sierra Nevada as amended by the 2004 SNFPA ROD and as being evaluated for amendment here provide broad programmatic direction but do not authorize specific projects. Any proposals to treat burned areas will be designed considering the best available scientific information, including scientific findings related to wildlife use of burned habitats and will include public involvement and site-specific analysis and documentation of the decision under NEPA. Those decisions will consider the specific needs of each proposal which could include providing for public safety, salvage of killed trees, reforestation of burned forests, and protection and retention of snags for wildlife habitats, among others.

Comment #14: *The DSEIS, on pp. 27-34, asserts that alternatives that would reduce annual wildfire acres the most would move fire regimes closer to their historic ranges, and alternatives that would reduce wildfire acres relatively less “would not make significant progress toward moving fire regimes closer to their historic ranges” (DSEIS, p. 27). This is clearly inaccurate scientifically, as there is no*

debate about the fact that there are currently far fewer wildfire acres annually, on average, than there were historically, prior to fire suppression (Stephens et al. 2007). (JMP)

Response: In the 2004 SEIS (Volume 1, pp. 328 through 333), effects of Alternatives F2 through F8 are assessed based how their treatment strategies would affect not only the trend in annual wildfire acres burned but also their potential to move fire regimes closer to their historic range and condition class 1, as defined by the National Fire Plan (see 2004 SEIS, Volume 1, p. 125). The movement of landscapes from condition classes 2 and 3 (where fire regimes have been altered from their historic ranges) toward condition class 1 (where fire regimes more closely align with historic ranges) is a desired outcome of the *Implementation Plan for the Comprehensive Strategy* (2004 SEIS, Volume 1, pp. 125 through 126) and the SNFPA planning efforts. Management of the Sierra Nevada national forests is intended to shift the current trajectory of forest conditions (function, structure, and composition) from conditions reflecting decades of fire suppression to conditions reflecting realignment with more typical fire regimes of the Sierra Nevada (2004 SEIS, Volume 1, p. 67).

The commenter points out that the wording in the 2010 Draft SEIS appears to link fewer wildfire acreages burned with movement toward desired historic fire regimes. However, this is not the intention. Fire regimes are not simply based on the acreage burned annually, but rather encompass a suite of attributes, including fire frequency, intensity, seasonality, and extent (2001 FEIS, Volume 1, Glossary). The assessment of movement toward desired fire regimes is based on the capability to use active management (based on acres treated under a particular alternative) to shift the current trajectory of forest conditions (function, structure, and composition) from conditions reflecting decades of fire suppression to conditions reflecting realignment with more typical fire regimes of the Sierra Nevada. The 2013 Final SEIS uses the trend in annual wildfire acres burned as one of several factors to evaluate the alternatives' approaches for achieving the goal of restoring and maintaining ecosystem structure and composition. The confusing language referencing whether treatments would "move fire regimes closer to their historic range and condition class 1" was removed from each alternative in Section 4.3. of the 2013 Final SEIS (pp. 43 through 46).

Comment #15: *The DSEIS, on pp. 34-40, states a goal of promoting increased post-fire salvage logging, especially areas of moderate- or high-intensity fire, and alternatives are rated positively to the extent that they most aggressively allow and encourage post-fire salvage logging. However, the DSEIS fails to explain how increased post-fire salvage logging would be good for forest ecosystems of the Sierra Nevada and the native biodiversity in these ecosystems, and utterly fails to analyze the adverse impacts of increased post-fire salvage logging on the many wildlife species, including many rare and imperiled species, that depend upon post-fire habitat, especially high-intensity fire areas... The DSEIS fails to explain why alternatives are evaluated and rated positively to the greatest extent if they promote the greatest amount of post-fire salvage logging, especially salvage logging of high-intensity areas. (JMP)*

Response: The 2013 Final SEIS does not state a goal of promoting increased post-fire salvage harvesting. It simply assesses the relative opportunity for managers to take active steps to restore ecosystems after severe wildfires and other large catastrophic disturbance events under each alternative (2013 Final SEIS, Section 4.2.3., pp. 41 through 44). The alternatives are evaluated by comparing their management emphases, degree of active management, and degree of local flexibility (ibid). Table 4.2.3. in the 2013 Final SEIS provides a relative comparison of alternatives in terms of their capability to provide opportunities to take management actions to restore ecosystems following severe wildfires of other large catastrophic disturbance events (2013 Final SEIS, p. 42).

Effects of the alternatives on wildlife species, including those that use post-fire habitat, are addressed throughout the 2001 FEIS and 2004 SEIS analyses, with too many citations to reference here.

Analyzing these effects in the 2013 SEIS is beyond the narrow scope of the environmental analysis (see Section 1.4).

Potential effects on resources are analyzed for site-specific actions. The broad programmatic nature of a forest plan amendment, such as the Sierra Nevada Forest Plan Amendment, does not specify where and when specific areas would be treated. Direct, indirect, and cumulative effects on affected resources are analyzed, consistent with the requirements of NEPA, when a site-specific action is proposed. Following a wildfire, the local and landscape context is considered to determine the extent that post-fire management is proposed, if any. In general, priority is placed upon providing for public safety by removing trees that pose a hazard to people or property. In addition, the short-term and long-term implications of managing the burned landscape are considered when post-fire salvage harvesting is proposed. In a programmatic document, it is not possible to predict exactly when and where future wildfires will occur or how severely specific areas will burn. Only relative amounts of fire by severity can be estimated as was done for the 2001 FEIS and the 2004 SEIS. The current 2004 SEIS decision calls for “managing disturbed areas for long-term fuels profiles, restoring habitat, and recovering the value of some dead and dying trees. Restoration projects can include salvage of dead and dying trees for economic value as well as for fuels reductions. Well-thought-out restoration will keep us on the path of achieving old forest conditions and of re-establishing connectivity between patches of habitat in a proactive manner” (2004 SNFPA ROD, p. 6). The significance of environmental consequences of post-fire salvage on wildlife species that utilize burned areas, such as the black-backed woodpecker, can only be assessed when the appropriate landscape context to the availability of burned habitats is known. Then the actual amount of habitat disturbance from proposals can be weighed against the total availability of burned habitats, including other suitable burned areas from other nearby fires. The consequences of post-fire salvage and leaving areas untreated on black-backed woodpeckers and other species and on other resources and management objectives are evaluated once a project is contemplated and proposed. Finally, as explained in the response to Comment #12, decisions on post-fire management consider many factors in addition to wildlife habitat and wildlife uses.

Comment #16: *The DSEIS fails to acknowledge that new scientific information concludes that California spotted owls preferentially select unlogged high-intensity fire areas for foraging, while using low-intensity areas for roosting/nesting (Bond et al. 2009). (JMP)*

Comment #17: *The DSEIS fails to divulge or analyze the adverse impacts of increased post-fire salvage logging on the viability of Black-backed Woodpecker populations in the Sierra Nevada. (JMP)*

Response: Effects of the alternatives on wildlife species, including those that use post-fire habitat, are addressed throughout the 2001 FEIS and 2004 SEIS analyses, with too many citations to reference here. Analyzing these effects in the 2013 Final SEIS is beyond the narrow scope of the environmental analysis, which was established by the Eastern District Court of California to remedy errors relative to the analysis of alternatives presented in the 2004 SEIS (See Section 1.4.). The forest plans define plan components that guide management of the national forest but they do not authorize any specific projects or activities (2004 SNFPA ROD, pp. 15 and 20) such as post-fire salvage. Further evaluation and consideration of impacts to species such as the California spotted owl and black-backed woodpecker would be made in the context of site-specific project environmental analysis and decisions, which would include public involvement. Examples of items considered at the time a site-specific project is proposed include: 1) the extent that fires burn and produce or affect habitat for a given species across an area over time; 2) the extent that post-fire salvage is proposed or has occurred in other areas; and 3) the extent that mitigation measures are incorporated into projects to minimize impacts to a given species. Forest Service direction sets forth environmental analysis processes at the forest plan and project level for consideration of consequences to species designated as Forest Service Sensitive (California spotted

owl) and Management Indicator Species (black-backed woodpecker), which is followed under all alternatives. Evaluations of effect for site-specific proposals consider the best available scientific information at the time of analysis.

C. ALTERNATIVE PREFERENCES

Comment #18: *My preferences lead me to favor Alternatives F4 and F7. (Rugg)*

Comment #19: *The Forest Service's original selection of Alternative S2 was and is still the appropriate alternative to move forward with management of the national forests in the Sierra's until the new land management plans are developed and implemented on each forest. (Stewart)*

Response: Comments that state a position for or against a specific alternative give the Forest Service a sense of the public's feelings and beliefs about a proposed course of action. Such information can be used by the decision maker in arriving at a decision. It does not however suggest a need for modifying the environmental analysis or documentation.

D. FOREST PLAN REVISION

Comment #20: *The Forest Service should immediately return to the standards from the 2001 SNFPA but should also revise that plan to further reduce and eliminate all commercial logging in the Sierra Nevada to protect communities from wildfire, restore biological diversity, and to help mitigate climate change. (SFK)*

Comment #21: *Removing fuels for biomass production should be avoided because it is cost-prohibitive and also contributes significantly to carbon released into the atmosphere by the additional transportation of low-value material. Instead this material should be treated on-site to contribute nutrients to forest soils. (SFK)*

Comment #22: *Post-fire salvage logging should also be prohibited because of the serious environmental consequences to forest soils and watersheds. (SFK)*

Comment #23: *Carbon sequestration should be one of the over-riding goals of a new plan for the Sierra Nevada national forests. (SFK)*

Response: Revising forest plans for the Sierra Nevada national forests is beyond the narrow scope of the purpose and need for this SEIS (described in Section 1.4. above). Three of the SNFPA forests (Sierra, Sequoia, and Inyo National Forests) are currently undergoing forest plan revision under the 2012 forest planning rule and are expecting to have revised forest plans in 2015. National forests are managed for their contribution to ecological, social, and economic sustainability. Aspects of forest plans that are in need of change will be identified through a public process as a part of revising each forest's Land and Resource Management Plan. These changes may include forest plan components from the 2004 SNFPA.

E. EXTENSION OF COMMENT PERIOD

Comment #24: *The Forest Service should extend the DSEIS comment period indefinitely or reopen the comment period at a later time after a ruling from the Ninth Circuit Court of Appeals.*

In response to Sierra Forest Legacy's appeal to the Ninth Circuit of the district court's Nov. 4, 2009 holding, the same district court issued an order staying or eliminating its deadline for comments on the DSEIS without setting a new deadline. See Sierra Forest Legacy v. Rey, No. 2:05-cv-00211 (E.D. Cal.

March 1, 2010). The Forest Service, however, maintained an arbitrary May 5, 2010 deadline anyway, which unnecessarily exercises the public for no real purpose. Any comments now on the DSEIS will be meaningless if the Ninth Circuit were to overturn the district court's holding for any reason because the Forest Service would then have to enter into a new process. Even if the Ninth Circuit were to affirm the district court's decision, the Forest Service would need to reopen the comment period to allow more thorough input from the public, so its environmental analysis could be fully informed. (SFK)

Response: The 2010 Draft SEIS was prepared and released for comment under the original District Court Order that established a May 1, 2010 deadline to complete a new SEIS. The Notice of Availability for the Draft SEIS was published on February 19, 2010 and it established a 45-day comment period ending April 5, 2010. On February 25, 2010 and March 1, 2010, Judge Morrison England issued orders staying the May 1 deadline. In considering the stay of the deadline, the Forest Service issued a letter to all interested parties on March 11, 2010 explaining the rationale for continuing the comment period already initiated. The primary reason for continuing to receive comments was to determine if additional modeling was needed based upon the comments received given that the lead modeler would retire in July 2010. In recognition of the potential lost time for interested parties to submit comments, an update to the Notice of Availability was published on March 19, 2010 to extend the comment period an additional 30 days ending May 5, 2010. A preliminary review of the public comments determined that no additional modeling was required prior to the lead modeler retiring. The April 15, 2013 order required the same ultimate remedy regarding the purpose of the SEIS, leaving the nature and scope of the Draft SEIS unchanged. Therefore, re-opening the comment period was not determined to be necessary.

Appendix B: Letters from Officials

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State of California
DEPARTMENT OF JUSTICE



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January 12, 2010

Via Electronic and U.S. Mail

Ron Pugh
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U.S. Forest Service
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RE: Notice of Intent to Prepare a Supplemental Environmental Impact Statement to the 2004 Framework per November 4, 2009 Court Order
(74 Fed. Reg. 65508 (Dec. 10, 2009))

Dear Deputy Director Pugh:

On December 10, 2009, the Forest Service issued a Notice of Intent to prepare a Supplemental Environmental Impact Statement (SEIS) analyzing the 2004 Sierra Nevada Framework, in order to comply with the court orders issued in *Sierra Forest Legacy v. Rey*, No. 2:05-cv-00205-MCE-GGI-1 (E.D. Cal., Nov. 4, 2009) and *People of the State of California v. USDA*, No. 2:05-cv-00211-MCE-GGH (E.D. Cal., Nov. 4, 2009). According to the Notice, the Forest Service expects to issue a Draft SEIS in early February, 2010.

We are very concerned that the Forest Service will not comply with National Environmental Policy Act if it follows the course laid out in the Notice. The Forest Service states it will run the alternatives considered in the 2001 Framework process through updated modeling techniques. There is no indication, however, that the Forest Service will formulate any new alternatives to meet the specific purposes and objectives that gave rise to the stated need to jettison the 2001 Framework and replace it with the 2004 Framework. As the Ninth Circuit has held:

[T]he 2004 SEIS introduced substantively new objectives from those contained within the 2001 FEIS [Final Environmental Impact Statement]. The 2004 SEIS repeatedly

Ron Pugh
U.S. Forest Service
January 12, 2010
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stated that its purpose was to "*adjust existing* management direction," 2004 SEIS at 3098 (emphasis added), and to *broaden* the basic strategy "to include *other management objectives* such as reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events," 2004 SEIS at 2994 (emphasis added). The introduction of these new objectives plainly constituted a change in circumstance that is "relevant to the development and evaluation of alternatives" that USFS "must account for... in the alternatives it considers." *Natural Res. Def Council v. U.S Forest Serv.*, 421 F.3d at 813.

Sierra Forest Legacy v. Rey, 577 F.3d 1015, 1021-22 (9th Cir. 2009). Absent from the Notice of Intent, for example, is any commitment to examine alternative methods of funding fuels reduction work, other than the logging of large trees. As the Ninth Circuit noted, "USFS forthrightly concedes that logging larger trees does nothing in itself to prevent forest fires because larger trees make poor fuel." *Id.* at 1020.

To the extent that the Forest Service is relying on the district court's remedy decision to justify only a "narrow" environmental document (*see* 74 Fed. Reg. 65508), we note that the decision currently is on appeal. *People v. USDA*, Case No. 10-15026 (9th Cir.). Given the Ninth Circuit's previous ruling, it is extremely unlikely that the district court's characterization of the NEPA violations as "relatively minor" (*see People v. USDA*, Case No. 2:05-cv-00211 (E.D. Cal.), Order (11/04/09) at p. 7) will stand.

Under these circumstances, the most prudent course, and the one that would best serve the public interest, would be for the Forest Service to consider a full range of alternatives that are specifically designed to address the agency's stated, post-2001 Framework concerns. We realize that the district court's order requires the Forest Service to complete a SEIS by May 10, 2009. If the Forest Service does not believe that it can comply with its NEPA obligations by this date, we would be willing to work with the agency to seek an extension, with specific conditions, from the appropriate court.

Sincerely,

JANILL L. RICHARDS
SALLY MAGNANI
Supervising Deputy Attorneys General

For EDMUND G. BROWN JR.
Attorney General



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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JAN 11 2010

Ron Pugh
Deputy Regional Planning Director
US Forest Service
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Vallejo, CA. 94592

Subject: Scoping Comments for the 2004 Sierra Nevada Framework

Dear Mr. Pugh:

The Environmental Protection Agency (EPA) has reviewed the Notice of Intent to prepare a supplemental environmental impact statement (SEIS) for the above action. Our review is pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

EPA recognizes the extensive planning process you have undertaken with the Sierra Nevada Framework (Sierra Nevada Forest Plan Amendment (SNFPA)). We support the goal of reducing catastrophic fire, while minimizing significant adverse environmental impacts. The program-level guidance embodied in the SNFPA provides the framework for land management decisions in 11 National Forests, and direction for the wildland urban interface, regional water quality and air quality, and cumulative effects. The far-reaching influence of the SNFPA cannot be overstated.

Last year, your office announced a Forest Plan Revision initiative for the Sierra Nevada Forests. While we understand that the purpose of the proposed SEIS is to comply with two narrowly defined court orders, we recommend the SEIS clearly describe the integration of the subject evaluations within the larger Forest Plan Revision effort.

EPA's review of the previous Draft, Final, and Supplemental EISs identified avoidable significant environmental impacts to water quality, sensitive habitats, and threatened and endangered species. Our objections also reflected the decision to defer the evaluation of transportation impacts on water quality.

We urge the Forest Service to consider the above EPA issues when addressing the court ordered updated modeling and comparison of alternatives, and considering the objectives of reducing stand density for forest health, restoring and maintaining ecosystem structure and composition, and restoring ecosystems after severe wildfires and other large catastrophic disturbance events.

We appreciate the opportunity to provide comments on the preparation of the SEIS, and look forward to continued participation in this process as more information becomes available. Please send one hard copy and one CD of the SEIS to the address above (mail code: CED-2) at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at (415) 972-3521, or contact Laura Fujii, the lead reviewer for this project. Laura can be reached at (415) 972-3852 or fujii.laura@epa.gov.

Sincerely,



Kathleen M. Goforth, Manager
Environmental Review Office
Communities and Ecosystems Division

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